Appendix C: Annotated Bibliography for Task 3 – Nature and Extent

May 8, 2002

Date	Title	Author	Reference	Notes	T	S	A	P
1914	Danger From Lead Arsenate Poisoning	Rees, H.L.	State College of Washington Agricultural Experiment Station, Monthly Bulletin, Vol. II, No. 7, October 1914	Interesting article that refutes a recent incident where the death of childern in Bellingham, WA that were attributed to arsenic poison from peaches. Documents use of paris green for cabbages. Also documents the "ordinary' doseage or mixture for fruit trees as 2 pounds lead arsenate to 50 gallons water.	1	A	i	b
1936	Unproductiveness of Certain Orchard Soils as Related to Lead Arsenate Spray Accumulations	Vandecaveye, S.C., G.M Horner, and C.M. Keaton.	Soil Science, Vol 42, pg 203-213. 1936	Presents results of experiments related to growing barley and alfalfa on an old orchard in the Yakima Valley. Includes testing and profiling of arsenic in soil.	1	A	I	b
1941	A Study of the Effect of Lead Arsenate Exposures on Orchardists and Consumers of Sprayed Fruit	Neal, Paul A., Dreessen, Waldemar C., Reinhart, Warren H., Webster, Stewart H., Casterberg, Harold T., Fairhall, Lawrence T.	From the Division of Industrial Hygiene National Institute of Health, Public Health Bulletin No. 267		1	A	i	d
1968	Re-Establishing Apple Orchards in the Chelan-Manson Area	U.S. Department of Interior - Bureau of Reclamation	Unpublished Report.	Arsenic analyses at up to four separate depth intervals (deepest is 36 inches) at over 800 locations. Most arsenic results were between 0 and 400 ppm in shallowest interval. Concentrations were much lower (but still elevated in lower depth intervals). Context was soil phytotoxicity and effectiveness of reestablishing orchards in soil that use to be orchards.	1	A	i	d
1991	Phosphate Fertilizers Influence Leaching of Lead and Arsenic in a Soil Contaminated with Lead Arsenate	Davenport, J.R., and Peryea, F.J.	Water, Air, and Soil Pollution 57-58; 101-110	Results of laboratory column experiments indicate that the use of phosphate fertilizers can enhance arsenic mobility and phytotoxicity.	1	A	i	b
1991	Site Investigation Report, Metals and Pesticides Testing, Wenatchee School District, Wenatchee, Washington	Olympus Environmental, Inc.	Consultant Report prepared for Wenatchee School District. July 12, 1991.	Report summarizes site characterization at proposed elementry and middle school sites. 50 soil samples were collected using a systematic sampling grid. Arsenic, lead and DDT were detected up to 120 ppm, 2000 ppm and 46 ppm respectively at the middle school site. Concentrations were lower at the elementry school site.	1	A	i	a
1991	Phosphate-Induced Release of Arsenic from Soils Contaminated with Lead Arsenate	Peryea, Frank J.	Soil Science Society of America Journal, Volume 55, No. 5, September-October 1991	Presents results of bench scale experiments of arsenic mobility associated with phosphate application. Arsenic mobility correlated with phosphate concentration correlated with arsenic - phosphate exchange reactions.	1	A	i	b
1992	Lead and Arsenate in Two Apricot Cultivars and in 'Gala' Apples Grown on Lead Arsenate-contaminated Soils	Creger, Timothy L.; Peryea, Frank J.	HortScience, Vol. 27(12), December 1992	Presents results of a study that evaluates correlation of lead and arsenic levels in apricots and apples with lead and arsenic in soil. Arsenic concentration in fruit was correlated with soil concentrations but fruit concentrations were very low (maximum 70 ug/kg).	1	A	i	b
1993	Site Assessment for Heritage Hills Subdivision at Selah, Washington	PLSA Engineering & Surveying	Consultant Report prepared for Coldwell Banker Association	Presents results of a Phase II site assessment for a 44.4 acre subdivision north of Yakima. 6 samples were collected. Maximum arsenic and lead were 94 ppm and 600 ppm respectively.	1	A	i	a
1994	Vertical Distribution of Lead and Arsenic in Soils Contaminated with Lead Arsenate Pesticide Residues	Peryea, F.J., and Creger, T.L.	Water, Air and Soil Pollution 78:297-306, 1994. Kluwer Academic Publishers.	Presents results of a study of the vertical distribution of lead and arsenic in six existing orchards. Samples were collected about every 5 cm. Maximum concentrations occurred in the upper 4 to 10 inches of the soil column. Arsenic was enriched up to 4 ft. Lead enrichment occurred up to about 1.5 ft.	1	A	i	b
1995	Report of Independent Remedial Action Phase 11 Environmental Site Assessment and Remedial Excavation Monitoring Price Costco Warehouse, East Wenatchee, Washington	GeoEngineers	Consultant Report prepared for Price Costco, Kirkland, WA. September 18, 1995.	Site characterization and remediation was completed under MTCA's voluntary cleanup program. The 13.8 acre mixed use site included an active orchard. Maximum concentrations of arsenic, lead and DDD were 1,800 ppm, 4,000 ppm and 130 ppm near the location of a former batch mixing facility. Final remedy included offsite soil disposal, onsite consolidation and coverage with an impermeable cap, stormwater runoff controls and a proposed restrictive covenant.	1	A	i	a
1995	Independent Remedial Action Report: Castlerock Development, Wenatchee, WA.	Hammond, Collier & Wade-Livingstone Assoc., Inc.	Consultant Report prepared for Pacific Rim Land Co.	Documents remedial action completed at former 3.5 acre orchard site being converted to residential development. Arsenic, lead and DDT were contaminants of concern. Soil was contained on site and institutional controls were implemented. Cleanup completed under Ecology's Voluntary Cleanup Program.	1	A	i	a
1995	Measurement of Divalent Lead Activity in Lead Arsenate Contaminated Soils	Kalbasi, M., Peryea, F.J., Lindsay, W.L., Drake, S.R.	Soil Science Society of America Journal, Volume 59, No. 5, September-October 1991		1	A	i	b
1995	Evaluation of Soil Samples Collected at Gilbert Elementary School	URS Consultants, Inc.	Consultant Report prepared for Yakima School District No. 7	Documents the results of arsenic and lead soil sampling at an existing elementary school in Yakima. Arsenic concentrations were as high as 111 ppm; lead as high as 997 ppm.	1	A	i	a

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1996	Felker Orchard Contaminated Soil Remediation Report	Hammond Collier & Wade - Livingstone Associates, Inc.	Consultant Report prepared for Felker Orchards, Inc. Soap Lake, WA. March 1996	Felker Orchard, located on Lake Chelan in Chelan County has been used as an orchard for about 100 years. Site investigation and remediation was conducted in 1995 to facilitate property conversion. Arsenic, lead and DDT were above MTCA method A cleanup levels. The upper 6 inches of soil was removed at the 10 acre site and placed in an offsite location.	1	A	i	a
1996	Environmental Assessment Phase 1/11 for Eagle Hardware and Garden, Inc., Wenatchee, Washington	J-U-B Engineers, Inc.	Consultant Report prepared for Eagle Hardware and Garden, Inc.	Environmental site assessment for proposed Eagle Hardware on a former orchard in Wenatchee. 9.8 acre site included an orchard, house, shop with gas pump facility. Arsenic, lead and DDT were detected above MTCA cleanup levels.	1	A	i	a
1997	Independent Remedial Action Report, Sunset Ridge, 1805 Sunset Highway, East Wenatchee, Washington	Hammond, Collier & Wade-Livingstone Assoc., Inc.	Consultant Report prepared for C-D Housing Limited Partnership I - Chelan-Douglas Community Action Council, General Partner. September 1997.	Site characterization and remediation completed under MTCA's voluntary cleanup program. The 3.3 acre site was previously used as an orchard. Site redevelopment includes a daycare. Nine samples were collected with moderate lead and arsenic concentrations. Soil excavated and put under asphalt cap. Remedy includes restrictive covenant.	1	A	i	a
1997	Independent Remedial Action Report, Eagle Hardware and Garden, Inc. Store No. 453, Wenatchee, Washington	J-U-B Engineers, Inc.	Consultant Report prepared for Eagle Hardware and Garden, Inc.	Documents cleanup action completed under Ecology's voluntary cleanup program at the Eagle Hardware site in Wenatchee. Arsenic elevated to 36 inch depth, lead to the 18 inch depth. In situ capping of soil was chosen as remedial action. Institutional controls were also part of the remedy.	1	A	i	a
1997	Phosphate-Enhanced Movement of Arsenic Out of Lead Arsenate-Contaminated Topsoil and Through Uncontaminated Subsoil	Peryea, F.J., and Kammereck, R.	Water, Air and Soil Pollution 93: 243-254	Presents results of laboratory column studies to investigate arsenic mobility in the presence of phosphate fertilizer. Results indicate that phosphate fertilizers have the potential to greatly enhance downward movement of soil arsenic.	1	A	i	b
1998	Phosphate Starter Fertilizer Temporarily Enhances Soil Arsenic Uptake by Apple Trees Grown Under Field Conditions	Peryea, F.J.	HortScience, Vol. 33(5). August 1998.	Presents results of experiment to evaluate the effect of monoammonium phosphate fertilizer on apple trees grown in lead arsenate contaminated soil. Use of starter fertilizer can increase soil arsenic phytoavailability to apple trees however the effects on tree growth and food safety are insignificant.	1	A	i	b
1998	Historical use of lead arsenate insecticides, resulting soil contamination and implications for soil remediation	Peryea, Francis J.	Proceedings, 16th World Congress of Soil Science (CD ROM), Montpellier, France, 20-26 Aug. 1998.	Good overview documenting the use of lead arsenate as an orchard pesticide. Presents a general summary of the nature and extent of lead and arsenic in historic orchards and the factors that influence the distribution and application of potential remedial technologies.	1	A	i	b
1999	Report of Voluntary Remedial Action, Chandler House Site, Yakima, Washington	Fulcrum Environmental Consulting, Inc.	Consultant Report prepared for Tandre LLC, Yakima, WA. July 9, 1999.	Site characterization and remediation completed under MTCA's voluntary cleanup program. Project represented redevelopment of 1.4 acres of a former orchard (used for 40 years). Maximum arsenic, lead and DDT were 109 ppm, 1040 ppm, and 3.68 ppm respectively. Site remediation included a dust suppression plan during construction, in situ containment onsite under impermeable surfaces, restrictive covenant and operations and maintenance plan. Some site soil was also disposed offsite.	1	A	i	a
1999	Soil Characterization and Disposal Options, Proposed Gasoline Retail Facility, Costco Location No. 112, East Wenatchee, Washington	GeoEngineers	Consultant Report prepared for Costco Wholesale, Inc. c/o Barghausen Consulting Engineers, Inc, Kent, WA. February 3, 1999.	Site characterization completed for a proposed gasoline facility at existing Costco site that had gone through site remediation in 1995. Samples from four borings did not detect contamination above MTCA cleanup levels.	1	A	i	a
2000	Report of Voluntary Remedial Action Landmark Care Center, Yakima, Washington	Fulcrum Environmental Consulting, Inc.	Consultant Report prepared for Hyattcenters-Landmark, Inc. Yakima, WA. February 11, 2000	Site characterization and remediation completed under MTCA's voluntary cleanup program. Project represented redevelopment of 3.52 acres of a former orchard (used for 40 years). Maximum arsenic, lead and DDT were 163 ppm, 1040 ppm, and 0.156 ppm respectively. Site remediation included in situ containment onsite under impermeable surfaces, restrictive covenant and operations and maintenance plan. No soil disposed offsite.	1	A	i	a
2001	Soil Remediation Report, 581 and 583 Eastmont Avenue, East Wenatchee, Washington	AMEC Earth & Environmental, Inc.	Consultant Report prepared for LNR Affordable Housing	Describes site characterization and remediation conducted at an apartment complex that was a historic orchard. Lead and arsenic were detected up to 1570 ppm and 146 ppm respectively at a depth of 36 inches. Upper 18 inches of soil removed and replaced with clean fill over a geomembrane.	1	A	i	a
2001	Kissel Park, Remedial Investigation/Feasibility Study and Cleanup Action Plan	Floyd Snider McCarthy, Inc.	Consultant Report prepared for The City of Yakima. August 31, 2001	RI/FS and CAP prepared under an Agreed Order with Ecology. The 17 acre undeveloped site was an historic orchard that was converted to a hay field and later purchased by the Parks department. Samples were collected to a depth of 7 ft. Maximum arsenic and lead concentrations were 113 ppm and 335 ppm respectively. FS and CAP included evaluation and consideration of different soil tilling technologies.	1	A	i	a

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2001	Site Assessment and Remedial Action Report for the Proposed Eastmont Junior High School, East Wenatchee, Washington	Forsgren Associates, Inc.	Consultant Report prepared for Eastmont School District	Report describes site characterization and proposed remedy for proposed high school to be constructed on historic orchard land. Sampling was conducted in general orchard area and pesticide mixing area and mobile sprayer filling station area. Proposed remediation program includes offsite disposal, onsite disposal under impermeable areas, and a drainage plan.	1	A	i	a
1945	Spray Residues and Crop Assimilation of Arsenic and Lead	Jones, J.S., and Hatch, M.B.	Soil Science 60, 277-288	Evaluation of the concentration of lead and arsenic in soil impacted by orchard spray operations of lead arsenate. Experimental design involved growing the same fruit cultivar on contaminated and uncontaminated soil. Study concludes that enrichment in fruit grown in contaminated soil is not a health threat.	1	A	ii	b
1974	Before Silent Spring Pesticides & Public Health in Pre-DDT America	Whorton, James	Princeton University Press Princeton, New Jersey	Comprehensive document on the history of pesticide use, pesticide toxicity understanding, and pesticide regulation in the U.S. prior to about 1945.	1	A	ii	d
1976	Persistent Organic and Inorganic Pesticide Residues in Orchard Soils and Vineyards of Southern Ontario	Frank, R., Braun, H.E., Ishida, K., Suda, P.	Can. J. Soil Sci. 56: 463-484 (Nov. 1976)		1	A	ii	b
1979	Migration of Applied Lead in a Field Soil	Stevenson, Frank J. and Louis F. Welch	Environmental Science & Technology, Volume 13, Number 10, October 1979	Documents the migration of lead in shallow soil. Primary vertical migration mechanisms were leaching and bioturbation. Horizonatal movement was principally associated with physical transfer associated with tillage. Some minor transfer occurred through wind blown soil or plant particles.	1	A	ii	d
1850-1950	Codling Moth Information Support System Bibliography, Chemical Control of Codling Moth (1850-1950)	Integrated Plant Protection Center	Oregon State University		1	A	ii	b
1937	The Significance of Inorganic Spray Residue Accumulations in Orchard Soils	Jones, J.S., and Hatch, M.B.	Soil Science 44, 7-63	Presents results of a study of arsenic, lead and copper in shallow soil at commericial orchards in Oregon. Data presented as equivalent arsenic trioxide. Evaluates different apple and pear cultivars. Context is phytotoxicity of trees. Presents background on practices and attitudes prior to 1937.	1	A	ii	b
1977	Arsenic	National Research Council Committee on the Medical and Biological Effects of Environmental Pollutants	National Academy of Sciences: 1977	Comprehensive overview of the source, distribution and biological effects of arsenic. Has specific information on the history and operation of the Tacoma smelter, epidemilogical studies in Pierce County associated with the smelter, agricultural loading rates associated with pesticide application and arsenic and lead exposure to agricultural workers.	1	A	ii	d
1983	Spatial Distribution of Pesticide Residues in a Former Apple Orchard	Veneman, P.L.M, J.R. Murray, and J.H. Baker	J. Environ. Qual., Vo. 12 no. 1, 1983	Documents the spatial and vertical distribution of arsenic and lead at a former orchard site in MA.	1	A	ii	b
1998	An assessment of the amounts of arsenical pesticides used historically in a geographical area	Murphy, E.A., Aucott, M.	The Science of the Total Environment 218: 89-101	Provides statistics on historical use of lead and calcium arsenate compiled from public data sources. Arsenical use statistics are combined with crop production statistics to estimate arsenical pesticide loading rates.	1	A	ii	b
2000	Interim Guidance for Sampling Agricultural Soils, California Department of Toxic Substances Control, Revision 1, June 2000	California Dept of Toxic Substances Control	Department of Toxic Substances Control, California Environmental Protection Agency, Edwin F. Lowry, Director. June 2000.	Sampling guidance specifically for new schools being constructed on former agricultural lands. Does not apply to areas where pesticides were mixed, stored or disposed. Minimum suggested sampling frequency is 4 discrete samples for 1 acre. 8 discrete samples for 2 acres. 8 composite samples for 2 to 20 acre sites. Analysis for arsenic must be performed on discrete samples only.	1	A	ii	d
1978	Sources, Sinks, and Cycling of Arsenic in the Puget Sound Region	Carpenter. R., M. L. Peterson, and R.A. Jahnke	Estuarine Interactions, pp. 459-480. Academic Press, ISBN 0-12-751850-9.	Evaluation of arsenic concentrations in sediment and sediment sources (dust and surface water) in Puget Sound. Presents dust concentration in air in Seattle vs. wind direction as well as concentration in rain and snow. Presents data in sediment cores and correlates arsenic spikes with Tacoma smelter operation.	1	B	i	d
1991	Fate of Arsenic and Cadmium in Forest Soils Downwind from the Tacoma Copper Smelter`	Dempsey, James Edward	University of Washington: M.S. Thesis	Samples were collected in shallow forest soils between 2 and 40 km from the Tacoma Smelter stack. Documents arsenic and cadmium concentrations by soil horizon and depth. Discusses bioconcentration of arsenic in Douglas Fir needles. Cites hydrous metal oxides as the primary adsorption mechanism to bind arsenic.	1	B	i	d
1992	Baseline Risk Assessment Ruston/North Tacoma Operable Unit Commencement Bay Nearshore/Tideflats Superfund Site, Tacoma, Washington	Glass, Gregory L. and Science Applications International Corporation, Bothell, Washington	Technical Enforcement Support at Hazardous Waste Sites TES 11-Zone 4 DCN: TZ4-C10020-RA-09242 Prepared for U.S. EPA	Baseline Risk Assessment for the Tacoma Smelter Superfund site.	1	B	i	c

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1993	Design Analysis for Ruston/North Tacoma Operable Unit Residential Soil Sampling	ICF Technology Incorporated	EPA Work Assignment Number: 59-28-OLF3; EPA Contract Number: 68-29-0059	Presents a statistical analysis of soil sampling methodology based on assumed distribution of contaminants in the near vicinity of the Tacoma smelter.	1	B	i	c
1994	The Asarco Tacoma Smelter Superfund Projects: A Brief Overview	U.S. EPA	EPA 910/R-94-001	Fact sheet published by EPA that summarizes site history and characterization and remediation efforts.	1	B	i	c
1997	X-Ray Fluorescence Investigation of Soils Leroi Smelter Site, Northport, Washington	Science Applications International Corporation	WSDOE Toxics Cleanup Program, Ecology Contract No. C9300048, SAI018, SAIC Project No. 01-0817-05-7050	Presents soil data used to characterize impact in vicinity of the LeRoi Smelter in Stevens County. A field XRF was used to evaluate data. 38 samples were also sent to lab for correlation with XRF data. Correlation varied from poor to good depending on the particular metal and data set. Arsenic and lead were detected as high as 1915 mg/kg and 2400 mg/kg respectively using the XRF.	1	B	i	a
1999	Proposed Maury Island Regional Park Soil Sampling Arsenic Results	Landau Associates	Consultant Report for King County Capital Planning & Development	Initial screen level soil sampling at 289 acre park on Maury Island. Arsenic was detected up to 81 mg/kg.	1	B	i	a
1999	Resident Self-Testing Protocol	Seattle King County Public Health	Seattle King County Public Health; July 2, 1999.	Provides guidelines for property owners and residents who would like to test their own soils. Specifically references Vashon and Maury Island elevated arsenic, lead and cadmium levels. Presents field sampling methodology including materials needed, depth, interpretation of results and guidelines for expanded sampling.	1	B	I	d
1999	Environmental Soil Sampling Arsenic, Cadmium, and Lead, Lone Star Maury Island Site, King County, Washington	Terra Associates, Inc.	Supplement to DEIS for Gravel Mine	Presents data for arsenic, lead and cadmium from 3 depth intervals (down to 18 inches) on a proposed mine site on Maury Island, downwind of the Tacoma smelter. Primary smelter impacts were documented in the upper 12 inches.	1	B	i	a
1999	Integrated Final Cleanup Action Plan and Final Environmental Impact Statement for the Upland Area Volume 1 through 4	WSDOE	Everett Smelter Site, Everett, WA-Cleanup Action Plan & Impact Statement	Four volume set presents the RI/FS summary, and EIS for the Everett smelter site (uplands) completed by Ecology and its contractors.	1	B	i	a
2000	Field Sampling Plan for Field Work Conducted in Sumner 2000 for the Peripheral Area Everett Smelter Site, Everett, Washington	Science Applications International Corporation	WSDOE Toxics Cleanup Program	Field sampling plan for Ecology sampling at offsite properties impacted by the Everett Smelter	1	B	i	a
2000	Health & Safety Plan for Peripheral Area Sampling and Analysis Everett Smelter Site, Everett, Washington	Science Applications International Corporation	WSDOE Toxics Cleanup Program	Health and Safety plan for Ecology sampling at offsite properties impacted by the Everett Smelter	1	B	i	a
2000	Quality Assurance Project Plan for Peripheral Area Smelter Site, Everett, Washington	Science Applications International Corporation	WSDOE Toxics Cleanup Program	Quality assurance project plan for Ecology sampling at offsite properties impacted by the Everett Smelter	1	B	i	a
2000	Vashon/Maury Island Soil Study 1999-2000 Final Report, Public Health - Seattle & King County	Seattle & King County Public Health Department and Gregory L. Glass	Final Report Public Health - Seattle & King County	Presents results for arsenic and lead at two shallow depth intervals at undisturbed locations in south King County, primarily on Vashon and Maury Islands. Locations were generally downwind of the Tacoma smelter. Cadmium was also sampled. Over 400 samples were collected that indicated likely smelter impacts over a relatively large area of south King County.	1	B	i	a
2000	Sampling Design for Public Child-Use Areas Vashon-Maury Island	Seattle King County Public Health and Vashon-Maury Island Work Group	Seattle King County Public Health Memorandum; September.	Presents sampling design for targeted sampling at 10 daycare/preschool, 2 camps, 10 schools and 11 parks on Vashon and Maury Island.	1	B	i	a
2000	Property Cleanup Manual for the Peripheral Area of the Everett Smelter Site	WSDOE	WSDOE Toxics Cleanup Program	Documents cleanup protocols and performance criteria for Everett Smelter.	1	B	i	a
2001	Sampling Design Memorandum for Resampling Selected Child-Use Areas Vashon-Maury Island	Seattle & King County Public Health, Greg Glass and WSDOE	Seattle & King County Public Health Memorandum. November, 2001	Presents sampling design for resampling to better characterize selected child-use area decision units and support Interim Action decisions.	1	B	i	a

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2001	Review of Available Data on Types of Cancer Related to Arsenic Exposure: Vashon-Maury Island, Washington State and Washington State Counties 1980-1998	Seattle King County Public Health Department and WSDOH and WSDOE		Follow-up report to undisturbed soil sampling report conducted by SKCPH (July 2000). The objectives of the report were to present the rates of these cancer types on Vashon and Maury Islands and to compare them with cancer rates elsewhere in the state. No statistically significant differences were found between Vashon/Maury Islands and the state or King County.	1	B	i	d
2001	Survey of Typical Soils Arsenic Concentrations in Residential Areas of the City of University Place	WSDOE	Washington State Department of Ecology, Publication No. 01-03-008, Environmental Assessment Program	Presents results of arsenic soil sampling conducted on residential properties south of the Tacoma Smelter in University Place. 59 properties were sampled at three depths (down to 12 in). Maximum concentration was 163 ppm. 60 percent of properties exceed the 20 ppm MTCA cleanup level.	1	B	i	a
1974	Contamination of Soils Near a Copper Smelter By Arsenic, Antimony and Lead	Crecelius, E.A., Johnson, C.J., and Hofer, G.C.	Water, Air, and Soil Pollution. Vol. 3. Pg 337-342. 1974	Presents a summary of known regional soil data for arsenic, lead and antimony associated with the Tacoma smelter's stack emissions. Soil data is summarized into the following areas: Vashon Island, Maury Island, Tacoma Area, East of Tacoma, West of Tacoma, North of Seattle. Arsenic was elevated in all areas.	1	B	ii	d
2001	Contributions of Pesticide Use to Urban Background Concentrations of Arsenic in Denver, CO	Folkes, David J., Kuehster, Theodore E., EnviroGroup Limited, Litle, Robert A.,	Contaminated Soils, Volume 6, Chapter 9, pages 107-130. Amherst Scientific Publishers, Amherst, MA	Paper presents on overview of soil background data as it relates to the Globe Smelter site in Denver, CO. Over 20,000 soil samples were collected. RI data had characterized urban background concentrations (97.5 percentile) at 28 mg/kg. Review of data indicated anomalous background concentrations possibly associated with arsenical herbicide use.	1	B	ii	d
2001	Site Characterization Report and Cleanup Plan, Maury Island Regional Park	Landau Associates	Consultant Report for Susan Black & Associates and King County Capital Planning & Development. February 28, 2001.	Presents sampling results and cleanup plan for 289 acre park on Maury Island in south King County. 65 samples were collected systematically from predefined areas of the site. Maximum arsenic and lead concentrations were 243 ppm and 439 ppm respectively. Cleanup plan called for onsite containment, operations and maintenance plan, institutional controls and dust monitoring plan during construction.	1	B	ii	a
2001	Sampling Design for Mainland Phase I Study: Further Evaluation of Soil Contamination King County Mainland Areas Tacoma Smelter Plume Site	Seattle & King County Public Health Department and Mainland Sampling Design Work Group	Seattle & King County Public Health Department Memorandum. February 2001	Presents sampling design for a health department study of arsenic and lead concentrations in shallow soil in south King County not including Vashon and Maury Islands.	1	B	ii	a
1999	Gardening On Lead-And Arsenic-Contaminated Soils	Peryea, Frank J.	Washington State University Cooperative Extension: EB1884.	Basic primer on issues associated with gardening on former orchard soils. Includes self sampling protocol.	1	C	i	d
2001	History of Arsenic and Lead in King County, Washington	Historical Research Associates, Inc.	Consultant Report prepared by Historical Research Associates for Seattle-King County Public Health Department.	Report summarizes research on the history of industries that might have contributed to arsenic and lead contamination through air emissions or direct soil application in King County. Includes summary of sources of information as well as extensive lists of industries, type of operation and operation periods.	1	C	i	d
1980	Soil Lead Accumulation Alongside a Newly Constructed Roadway	Milberg, Ronald P., Lagerwerff, John V., Brower, Donald L., and Biersdorf, George T.	J. Environ. Qual., Vo. 9 no. 1, 1980	Documents the accumulation of lead in surface soil next to a major interstate highway. Significant lead accumulations were documented up to 25 meters of the highway. Lead continued to accumulate over the time period 1971 to 1977. Maximum lead concentration was 246 ppm at the 8 meter distance.	1	C	ii	d
2001	Arsenic Background Concentrations in Florida, U.S.A. Surface Soils: Determination and Interpretation	Chen, Ming; Ma, Lena; Hoogeweg, C.G.; and Harris, W.G.	Environmental Forensics, Volume 2, pg 117-126. 2001.	448 samples were collected in near pristine soils to characterize natural background arsenic concentrations. Baseline background concentration defined as the 97.5th percentile of the lognormal distribution. Arsenic background was estimated at 7.02 mg/kg.	1	C	ii	d
2001	Background Concentration of Arsenic in Surface Soil for the Province of Ontario as Determined Using the Ontario Typical Range Methodology	Jones, R.D.	Contaminated Soils, Volume 6, Chapter 9, pages 131-141	625 locations were sampled from 10 land use types representing background conditions in Ontario, Canada. The 90th percentile arsenic concentration across nine of the ten land use types was 6.8 mg/kg. A non-parametric measure of arsenic concentrations for the same data set was 12 mg/kg. Old urban residential soil had a statistically greater arsenic background concentration; the 90th percentile was 10.0 mg/kg.	1	C	ii	d
1999	Hazards of Short-Term Exposure to Arsenic-Contaminated Soil	WSDOH	Washing State Department of Health Office of Environmental Health Assessment Services. January, 1999	Summarizes potential exposures assumptions to arsenic contaminated soil and presents scenarios with calculations of potential harmful levels of arsenic in soil. Also presents an evaluation of bioavailability studies.	1	D	i	d
1983	Emissions, Cycling and Effects of Arsenic in Soil Ecosystems	Woolson, Edwin A.	Biological and Environmental Effects of Arsenic, Elsvier Science Publishers B.V., Chapter 2		1	D	ii	d

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2001	Selected Sites with Potentially Naturally Occurring Elevated Background Arsenic and/or Beryllium Levels	Schick, Kevin			1	D	ii	d
2002	Impact of Lead-Contaminated Soil on Public Health (Analysis Paper)	Johnson, Barry L., Ph.D.	ATSDR Science Corner		1	D	ii	d
1909	Washington State College Spraying Calendar for 1909	Beattie, R Kent, Melander, A.L.	Washington Agricultural Experiment Station Pullman, Washington, January 1909, Popular Bulletin No. 13	Recommends the use of arsenate of lead for codling moth (one spray is sufficient), slug and tent caterpillar. 1 lb lead arsenate to 50 lbs water.	2	A	i	b
1913	Commercial Arsenates of Lead and Lime-Sulphur	Thatcher, R.W.	State Agricultural Experiment Station, Popular Bulletin No. 15. February 20, 1918	Presents an analysis of the content of various brands of lead arsenate sampled between 1908 and 1912. Lead to arsenic ratio was between 1:1.87 and 1:3.84. Includes brief discussion on historical mixing and use practices.	2	A	i	b
1915	Pests and Diseases of the Apple, Pear, Peach, Plum, Cherry, etc.	Melander, A.L., George, D.C.	State College of Washington, Washington Agricultural Experiment Station, Spraying Calendar for 1915, Popular Bulletin no. 77, January, 1915	Recommends the timing and use of specific pesticides for specific pests, Arsenate of lead and zinc are recommended for various chewing insects.	2	A	i	b
1915	Spring and Summer Spraying for the Orchard	Rees, H.L.	State College of Washington Agricultural Experiment Station, Monthly Bulletin, Vol.II, No. 12, March, 1915	Documents spraying regieme for apples and pears; 4 spray applications of lead arsenate between when the flower buds have separated in a cluster to mid-September. Mixed 1 lb powder (or 2 lbs paste) to 50 gallons water. Lead arsenate not included in recommendations for stone fruit pests. Describes various insecticides used at the time including lead arsenate.	2	A	i	b
1916	The Control of Fruit Pests and Diseases: Sprays and Spraying	Melander, A.L., Heald, F.D.	Washington Agricultural Experiment Station Pullman, Washington, February, 1916, Popular Bulletin no. 100, The Control of Fruit Pests and Diseases.	Presents spray approaches "do not try to economize on spray by doing superficial work". Mixing instructions for lead arsenate are 1 lb to 40 or 50 gallons water - double strength for older insects.	2	A	i	b
1917	Potato Growing in Washington: Part III. Potato Insects	Yothers, M.A.	Washington Agricultural Experiment Station, Pullman, Washington, February 1917, Popular Bulletin No. 106, Potato Growing in Washington.	Have only a part of this reference for blister beetles as a potato pest. Recommends 2 lb lead arsenate or 1 lb paris green per 50 gallons of water. One spraying annually.	2	A	i	b
1918	Orchard Spraying	Frank, Arthur	State College of Washington Agricultural Experiment Station, Monthly Bulletin, Vol. V, No. 11, February, 1918	Brief summary of spray schedule for various insecticides. Mostly discusses Bordeaux mixture, Black Leaf 40 and lime sulfur spray.	2	A	i	b
1918	Garden Pests and Insects	Frank, Arthur	State College of Washington Agricultural Experiment Station, Monthly Bulletin Vol. VI, No. 3, June, 1918	Recommends the use of sodium arsenite, paris green or lead arsenate for the following pests: root maggot (radishes, turnips, onions etc), strawberry root weevil, wireworms, cabbage worms, cucumber beetle, slugs or snails, currant worms, tent caterpillars, fruit maggots.	2	A	i	b
1919	Sprays and Spray Material	Frank, A.	State College of Washington Agricultural Experiment Station, Monthly Bulletin Vol. VI, No. 11, February, 1919	Contains brief description of lead arsenate mixture used in spray guns.	2	A	i	b
1919	Spring Spraying Program for 1919	Frank, A.	State College of Washington Agricultural Experiment Station, Monthly Bulletin, Vol. VI, No.12, March, 1919	Discusses spray program for different types of pests including lead arsenate for chewing insects. Describes only a single spraying for codling moth. Recommends 1 lb powdered arsenic to 50 gallons of water.	2	A	i	b
1919	Insect Pests of the Garden and Their Control	Frank, A.	State College of Washington Agricultural Experiment Station, Monthly Bulletin Vol. VII, No. 3, June, 1919	Presents an annotated list of garden pests and recommends use of Black Leaf 40 and lead arsenate for their control.	2	A	i	b
1924	Stationary Spray Plants	Morris, O.M.	Stationary Spray Plants, State College of Washington Agricultural Experiment Station, Popular Bulletin125, January 1924	Documents the sucessful use of stationary spray plants at 12 sites in Wenatchee. Spray plants distribute pesticide spray from a centralized mixing location through a pipe system throughout the orchard. Stationary plants apparently were just coming into more widespread use in the early 1920s.	2	A	i	b
1934	Arsenic Injury of Apples	Overley, F.L., and Overholser, E.L.	State College of Washington Agricultural Experiment Station Pullman, Washington, Popular Bulletin No. 149, April 1934	Documents the injury and spray residue problems associated w/ lead arsenate use and presents methods to reduce injury. Documents that farmers commonly added white arsenic (arsenic trioxide) to commercial mixtures to increase strength.	2	A	i	b

Date	Title	Author	Reference	Notes	T	S	A	P
1938	Insects of the Blackberry, Raspberry, Strawberry, Currant, and Gooseberry	Hanson, Arthur J., and Webster, R.L.	State College of Washington Agricultural Experiment Station, Popular Bulletin No. 155, April, 1938	Recommends lead arsenate use for certain strawberry, currant and gooseberry pests.	2	A	i	b
1944	Pear Growing and Handling in Washington	Overholser, E.L., Overley, F.L., and Allmendinger, D.F.	State College of Washington Agricultural Experiment Station Pullman, Washington, Division in Horticulture, Popular Bulletin No. 174, February 1994.	Documents that codling moth loss to pears is less severe then apples. Recommends 1.5 lbs lead arsenic to 50 gallons of water. 3 sprays during the first codling moth brood (May) should be sufficent. In dense orchards a second July application (2 spray covers) is recommended. Recommends the addition of a light oil to the spray during certain applications.	2	A	i	b
1947	Biology and Control of the Western Raspberry Fruitworm in Western Washington	Baker, Wm. W., Crumb, S.E., Landis, B.J., and Wilcox, Joseph	The State College of Washington Institute of Agricultural Sciences Agricultural Experiment Stations Pullman, Washington, Bulletin No. 497, December 1947	Presents results of testing of arsenical and flourine insecticides on controling raspberry furitworm. Arsenicals can control fruit worm but left unacceptably high residues on fruit according to the bulletin.	2	A	i	b
1953	Effect of Season, Phosphate, and Acidity on Plant Growth in Arsenic-Toxic Soils	Benson, N.R.	Soil Science. Vol. 76, pg. 215-224. 1953	States that "almost all land that has been used for commercial production of apples or pears in eastern Washging contains enough residual lead arsenate from…. Sprays to interfere with plant growth". Evaluates the growth of barley under various conditions and lead arsenate applications.	2	A	i	b
1989	Leaching of Lead and Arsenic in Soils Contaminated with Lead Arsenate Pesticide Residues	Peryea, Frank J.	Water Research Center Project No. A-158-WASH, U.S. Department of the Interior Grant No. G1597		2	A	i	b
1990	Phosphate Fertilizer-Enhanced Arsenic Solubility and Leaching in Soils Contaminated with Lead Arsenate Pesticide Residues	Peryea, Frank J.	Water Research Center Project No. A-161-WASH, U.S. Department of the Interior Grant No. G1597-02		2	A	i	b
1991	Bioremedition of Lead Arsenate-Contaminated Soils	Peryea, Frank J.	Water Research Center Project No. A-168-WASH, U.S. Department of the Interior Grant No. G1597-03		2	A	i	b
1994	Surface-Water-Quality Assessment of the Yakima River Basin in Washington: Analysis of Major and Minor Elements in Fine-Grained Streambed Sediment, 1987	Fuhrer, Gregory J.; McKenzie, Stuart W.; Rinella, Joseph F.; Sanzolone, Richard F.; Skach, Kenneth A.; Gannett, Marshall W.	U.S. Geological Survey Open-File Report 93-30	Provides baseline water quality and sediment concentration data for trace metals. Arsenic was detected up to 140 mg/kg in soil from agricultural land/areas. Lead was also elevated.	2	A	i	d
1994	Residential Arsenic and Lead Levels in an Agricultural Community with a History of Lead Arsenate Use	Wolz, Sarah	University of Washington: M.S. Thesis	Report attempts to characterize levels of arsenic and lead in dusts from indoor and outdoor play areas from homes in rural tree fruit production areas of eastern Washington. Concentrations of arsenic and lead were elevated in house dust but were less than urban and industrial levels and lower than biological effects thresholds. Has good literature summary of lead and arsenic in dust.	2	A	i	d
1998	Screening Survey for Metals and Dioxins in Fertilizers, Soil Amendments, and Soils in Washington State	WSDOE	Washington State Department of Ecology, Publication #98-331. November	Study presented characterization of metals (including arsenic and lead) in agricultural and non-agricultural soil in Columbian Basin. Ag and non-Ag soils were sampled in a paired sampling design. Arsenic and lead were not elevated in Ag soils as compared to non-Ag soils. Characterization of metals and dioxins in fertilizers and soil amendments was also performed. Arsenic and lead were elevated above MTCA cleanup levels in some fertilizer products.	2	A	I	a
1999	Surface-Water-Quality Assessment of the Yakima River Basin in Washington: Spatial and Temporal Distribution of Trace Elements in Water, Sediment, and Aquatic Biota, 1987-91	Fuhrer, Gregory J.; Cain, Daniel J.; McKenzie, Stuart W.; Rinella, Joseph F.; Crawford, Kent J.; Skach, Kenneth A.; Hornberger, Michelle I.; and Gannett, Marshall W.	U.S. Geological Survey Water-Supply Paper 2354-A	Presents sampling results for arsenic, lead and other trace metals in sediments, water and aquatic biota as part of the USGS NAWQA studies. Elevated arsenic and lead were documented as dissolved and suspended sediment load correlated to urban and agricultural areas of the Yakima Valley.	2	A	i	d

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1999	Surface-Water-Quality Assessment of the Yakima River Basin, Washington, Overview of Major Findings, 1987-91	Morace, Jennifer L., Fuhrer, Gregory J., Rinella, Joseph F., Mckenzie, Stuart W., and others	U.S. Geological Survey, Water-Resources Investigations Report 98-4113		2	A	i	d
2001	Orchard Soil Sampling	Cooperative Extension Washington State University	CE Publications EB1595	Provides sampling guidance for orchards as a tool to estimate fertilizer needs and identify soil related problems involving poor tree performance. Recommends intensive discrete systematic sampling (not composite sampling). Specifically identifies arsenic as a potential problem. Introduces the concept of sampling (i.e. decision) units.	2	A	i	b
1950	Cover Crops in Apple Orchards on Arsenic-toxic Soils	Overley, F.L.	The State College of Washington Institute of Agricultural Sciences Washington Agricultural Experiment Stations, Bulletin No. 514, December 1950	Evaluates the decline of alfalfa as an orchard cover crop due principally to lead arsenate. Describes early orchard cultivation and irrigation practices. Calculates that 10 years of orchard spray accumulates 4,500 lbs of lead arsenate per acre in the upper 6 inches of soil - equivalent to 3,222 lbs lead and 900 lbs arsenic trioxide. Correlates alfalfa toxicity to arsenic not lead or flourine. Seven cover sprays per season for 6 years increased total arsenic content in soil from 194 ppm to 396 ppm.	2	A	i, ii	b
1999	Findings and Recommendations for the Remediation of Historic Pesticide Contamination	Historic Pesticide Contamination Task Force	New Jersey Department of Environmental Protection	Documents the task force findings of the extent of lead and arsenic state-wide associated with historic agricultural use. Includes recommended response actions that focus on testing soils in future property transactions. No soil sampling was completed specifically for this study.	2	A	ii	b
2001	Identification, Evaluation and Selection of Remedial Options	Hilts, S.R., White, E.R., Yates, C.L.	Trail Lead Program		2	B	ii	d
1984	Bellevue Urban Runoff Program: Summary Report	Pitt, Robert and Bissonnette, Pam	Consultant Report prepared for the City of Bellevue. June 25, 1984.	Provides some data on the concentration and source of lead in urban runoff. Lead concentrations in street dirt were as high as 1500 mg/kg for 148th Ave SE.	2	C	I	d
1994	Sampling and Analysis of Selected Metals in Urban Vegetation and Soils	Herrera Environmental Consultants, Inc., Glass, Gregory L.	Herrera Environmental Consultants, Inc., Environmental Consultant	Documents arsenic, lead and other metal concentrations in compost/yard waste setout and urban soil in Seattle. Documents major sources and associated concentrations of urban lead levels in the Seattle area.	2	C	i	d
2001	What is CCA-Treated Wood?	CCA Research	CCA-Treated Wood		2	C	ii	d
2001	Petition HP 01-3 Requesting a Ban on Use of Chromated-Copper-Arsenate (CCA) Treated Wood in Playground Equipment	Consumer Product Safety Commission	Federal Register/Vol. 66, No. 135/Friday, July 13, 2001/Notices		2	C	ii	d
2001	Sampling for Residues of Arsenic, Chromium, and Copper in Substrates (Soils/Buffering Materials) Beneath/Adjacent to Chromated Copper Arsenate (CCA) - Treated Playground Equipment	Office of Pesticide Programs (OPP), Consumer Product Safety Commission (CPSC)	Modification of OPPTS Guidelines: OPPTS 875.2200 (Soil Residue Dissipation); OPPTS 840.1100 (Terrestrial Field Dissipation)		2	C	ii	d
2001	Chromated Copper Arsenate (CCA) Pressure Treated Wood Inventory and Management Practices in Alachua County	The Alachua County CCA Team			2	C	ii	d
2002	Environmental Issues on the Use of CCA Treated Wood	Stilwell, David E.	Department of Analytical Chemistry, The Connecticut Agricultural Experiment Station		2	C	ii	c
1996-2000	Final Report: Development of Chemical Methods to Assess the Bioavailability of Arsenic in Contaminated Media	Basta, Nicholas T., Rodriguez, Robin R., Casteel, Stan W.	National Center for Environmental Research Office of Research and Development U.S. Environmental Protection Agency, EPA Grant Number R825410		2	C	ii	c
1978	Effects of Arsenic in the Canadian Environment	National Research Council of Canada Associate Committee on Scientific Criteria for Environmental Quality	U.S. Public Health Service Public Health Bulletin 267-276	Similar to National Academy of Sciences 1977 publication on arsenic. Includes information on general arsenic chemistry and its distribution in various media . Includes a specific secton on industrial/domestic levels of arsenic. Presents a general summary of various mine/smelter impacts around the world. Presents a summary of data from various agricultural applications.	2	C	ii	d

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1989	Background Concentrations of Selected Chemicals in Water, Soil, Sediments, and Air of Washington State	PTI Environmental Services	Draft Report Section 1-7 for Washington Department of Ecology Olympia, Washington		2	D	i	a
1992	Surface-Water-Quality Assessment of the Yakima River Basin in Washington: Chemical Analyses of Major, Minor, and Trace Elements in Fine-Grained Streambed Sediment	Ryder, J.L.; Sanzolone, R.F.; Fuhrer, G.J., Mosier, E.L.	U.S. Geological Survey Open-File Report 95-520		2	D	i	d
1994	Washington State Metals in Soils Program: Preliminary Results	Ames, Kenneth C.	Hydrological Science and Technology, Volume 10, Number 1-4, 1994, American Institute of Hydrology, Pp.15-30		2	D	i	d
1995	Background Concentrations of Metals on Soils from Selected Regions in the State of Washington	Ames, Kenneth C., Prych, Edmund A.	U.S. Geological Survey, Water-Resources Investigations Report 95-4018	Presents a summary of background metals concentrations from 60 sites in Washington. Study done in conjunction with Ecology. Different analytical methods were used and evaluated in the study. 5 sampling sites were selected in the Yakima Valley.	2	D	i	d
1995	Data and Statistical Summaries of Background Concentrations of Metals in Soils and Streambed Sediments in Part of Big Soos Creek Drainage Basin, King County, Washington	Prych, E.A., Kresch, D.L., Ebbert, J.C., Turney, G.L.	U.S. Geological Survey, Water-Resources Investigations Report 94-4047	29 soil samples were collected in a King County watershed to evaluate metals background.	2	D	i	d
1997	Statistical Analysis and Areal Trends of Background Concentrations of Metals in Soils of Clark County, Washington	Ames, Kenneth C., Hawkins, Daniel B.	U.S. Geological Survey Water-Resources Investigations Report 96-4252	Presents the study results of background metals soil concentrations in Clark County, WA in conjunction with Ecology. 79 samples were collected. Background concentration (based on 90th percentile) for arsenic was 7.2 mg/kg; lead was 16 mg/kg.	2	D	i	d
1984	Trace Elements in Soils and Plants	Kabata-Pendias, Alina, and Pendias, Henryk.	CRC Press, Inc. Boca Raton, Fla. 1984	Often cited reference on the distribution of arsenic and lead in soil for different soil and rock types and for different contamination sources. Includes a summary of mean arsenic soil concentration for 15 different soil types. Concentraitons ranged from 3.6 mg/kg to 8.8 mg/kg.	2	D	ii	d
1984	Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States	Shacklette, Hansford T., Boerngen, Josephine G.	U.S. Geological Survey Professional Paper 1270, United States Government Printing Office, Washington : 1984		2	D	ii	a
1995	Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites	Breckenridge, R.P. and A.B. Crockett	EPA Engineering Forum Issue, EPA/540/S-96/500	Presents sampling design approaches for characterizing natural and anthropogenic background. Includes a summary literature background concentrations and anthropogenic sources and associated concentrations of various inorganic contaminants.	2	D	ii	d
1997	Washington Agricultural Statistics 1996-1997	Washington Agricultural Statistics Service			3	A	i	d
2001	2001 Washington Agricultural Statistics	U.S. Department of Agriculture, National Agricultural Statistics Service			3	A	i	d
2001	Washington Fruit Survey 2001	U.S. Department of Agriculture, Washington Agricultural Statistics Service			3	A	i	d
1994	Pesticide Use in US Apple Orchards: A Short History	Gianessi, Leonard and Mark Phillips	National Center for Food and Agricultural Policy Discussion Paper PS-94-2, October	Discusses the introduction of lead arsenate and its eventual replacement by DDT. Provides a similar short history for other orchard pesticides including a discussion of the economic, technological and health issues that effected pesticide use.	3	A	ii	b

*** KEY:**

Date	Title	Author	Reference	Notes	T	S	A	P

<u>**T**ype</u>: 1 = Pb and or As, 2 = General area-wide contamination constituents (including Pb/As), 3 = Fruit/vegetable survey information

<u>**S**ource</u>: A = Agricultural, B = Smelter, C = General sources of area-wide Contamination, D = Other

<u>**A**rea</u>: i = WA, ii = General states/countries

<u>**P**rogram</u>: a = MTCA, b = Ag study, c=EPA, d=other

	Date	Document	Description of Information Contained in Document
1	00/00/89	Kleppe, J.H.,, M.T.Otten, and J.T.Finn. 1989. Stabilization/Solidification of Metal-Contaminated Soils: Two Case Histories. *Stabilization and Solidification of Hazardous Radioactive, and Mixed Wastes*. 2:426-439. ASTM STP 1123, T.M. Gilliam and C.C. Wiles, Eds., American Society for Testing and Materials, Philadelphia, 1992. 426-439.	This paper describes treatability studies, design, and remediation for the stabilization of contaminated soil at two hazardous waste sites in Washington State. Site A was a large manufacturing facility approx. 80 acres in size. Soil contamination included lead, chromium, and arsenic. Site B was used to repair and store machinery and covered about 2 acres. Soil contamination included lead.
2	7/8/91	Peryea, F.J. 1991. *Bioremediation of Lead Arsenate-Contaminated Soils*. Submitted to The State of Washington Water Research Center (Project No. A-168-WASH) and The U.S. Department of the Interior (Grant No. G1597-03), for the period May 1, 1990 to April 30, 1991. Frank J. Peryea, Associate Soil and Hotricultural Scientist, Tree Fruit Research and Extension Center, Washington State University, Wenatchee, Washington. July 8.	Provides background on lead arsenate use and accumulation in orchard topsoils. Presents the methods used and results for a labortory study performed to determine if subjecting lead arsenate-contaminated soils to conditions known to promote biomethylation of Se would significantly reduce total soil arsenic.
3	12/00/93	EPA. 1993. Considerations in Deciding to Treat Contaminated Unsaturated Soils *In Situ*. *Engineering Forum Issue*. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Office of Research and Development. EPA/540/S-94/500. December.	An Issue Paper developed for the EPA national Engineering Forum and designed to assist the user in deciding if in situ treatment of contaminated soil is a potentially feasible remedial alternative and to assist in the process of reviewing and screening in situ technologies. The Issue Paper describes factors to consider in the selection of in situ treatment methods, the applicability of the technology to the contaminant, and the different types of in situ technologies.
4	05/00/94	EPA. 1994. *Combustion of Hazardous Wastes Containing Arsenic, Lead, and Mercury.* U.S. Environmental Protection Agency, Solid Waste and Emergency Response. EPA530-R-94-018. May.	A report that presents the approach and results of a study conducted to determine the extent to which wastes containing arsenic, lead, and mercury are combusted and to profile these practices based on the type of combustion facility and type of wastes burned.
5	03/00/95	EPA. 1995. Electrokinetic Soil Processing (Electrokinetics, Inc.). *Emerging Technology Bulletin*. U.S. Environmental Protection Agency. EPA/540/F-95/504. March.	EPA Emerging Technology Bulletin. This bulletin describes the electrokinetic remediation process, waste applicability, and test results for three pilot-scale studies.
6	04/00/95	EPA. *In Situ Remediation Technology Status Report: Electrokinetics*. EPA 542-K-94-007. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Technology Innovation Office, Washington, DC	Describes demonstrations, field applications and research on electrokinetics for re-editing contaminated soils and groundwater at waste disposal and spill sites. Contains descriptions of completed, ongoing, and future demonstrations and current research on electrokinetics in the United States. (3 pp)
7	08/00/95	EPA. 1995. Process for the Treatment of Volatile Organic Carbon and Heavy-Metal-Contaminated Soil (International Technology Corporation). *Emerging Technology Bulletin.* U.S. Environmental Protection Agency Superfund Innovative Technology Evaluation (SITE). EPA/540/F-95/509. August.	Describes the batch steam distallation and metal extraction treatment process that treats soils contaminated with organics and inorganics. Hazardous materials are separated from soils as concentrates, which can then be diposed of or recycled. Treated soil can be returned to the site. During treatment, waste soil is slurried and heated to 100 degrees Celcius. The metals extraction step involves soil washing with hydrochloric acid. (2pp)
8	9/18/95	GeoEngineers. 1995. *Report of Independent Remedial Action Phase II Environmental Site Assessment and Remedial Excavation Monitoring Price Costco Warehouse, East Wenatchee, Washington*. Prepared for Price Costco, Kirkland, Washinton. September 18.	Site characterization and remediation was completed under MTCA's voluntary cleanup program. The 13.8 acre mixed use site included an active orchard. Maximum concentrations of arsenic, lead and DDD were 1,800 ppm, 4,000 ppm and 130 ppm near the location of a former batch mixing facility. Final remedy included offsite soil disposal, onsite consolidation and coverage with an impermeable cap, stormwater runoff controls, and a proposed restrictive covenant.
9	10/00/95	Hammond Collier & Wade - Livingtone Associates, Inc. 1995. *Independent Remedial Action Report Castlerock Development, Wenatchee, Washington*. Prepared for Pacific Rim Land Co. October.	The site was a 3.5 acre apple orchard with elevated levels of lead, arsenic, and DDT in the soil. Cleanup remedy included relocation and containment of contaminated soil within a road embankment. The remedy also included institutional controls to ensure the integrity of the containment and consisted of a deed or plat restriction against disturbing the road embankment unless approved measures are taken to ensure the contaminated soils are disposed of properly.
10	10/29/95	Voigt, D.E., S.L.Brantley, and R.J.-C.Hennet. 1995. Chemical Fixation of arsenic in contaminated soils. *Applied Geochemistry.* 11:633-643, 1996. D.E. Voigt and S.L.Brantley, Department of Geosciences, The Pennsylvania State University, University Park, PA; Remy J.-C.Hennet, S.S. Papadopulos and Associates, Inc., Bethesda, MD. © 1996 Elsevier Science Ltd. October 29.	A paper that reports the results of a test that uses a modification of published fixation processes that have been used in the field to fix arsenic-contaminated soils. Also reports investigations of arsenic speciation in soils fixed by this method, and presents analyses of speciation of arsenic in contaminated soils, and in field- and loboratory-fixed soils.
11	03/00/96	Hammond Collier & Wade - Livingtone Associates, Inc. 1996. *Felker Orchard Contaminated Soil Remediation Report*. Prepared for Felker Orchards, Inc. Soap Lake, WA. March.	Felker Orchard, located on Lake Chelan in Chelan County has been used as an orchard for about 100 years. Site investigation and remediation was conducted in 1995 to facilitate property conversion. Arsenic, lead, and DDT were above MTCA method A cleanup levels. The upper 6 inches of soil was removed at the 10-acre site and placed in an offsite location.
12	10/00/96	EPA. 1996. *Recent Developments for In Situ Treatment of Metal Contaminated Soils.* U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 542-R-97-004. March.	A report that provides a status update (published in 1997) on available and promising technologies for in situ remediation of soil contaminated with heavy metals. The report is intended to assist in screening new technologies and evaluates *in situ* treatments such as electrokinetics, phytoremediation, soil flushing, and solidification/stabilization.
13	12/00/96	Pierznski, G.M., et.al. 1996. Use of Poplar Trees in Remediating Heavy Metal Contaminated Sites. *Annual Report of the Great Plains/Rocky Mountain Hazardous Substance Research Center.* Research Project Description, May 18, 1995-September 30, 1996. G.M.Pierznski, L.C.Davis, L.N.Reddi, L.E.Erickson, Kansas State University; J.L.Schnoor, University of Iowa. December.	Annual report on a research project investigating suitability of deep-planted poplars as a vegetative remediation strategy for heavy metal contaminated sites.

	Date	Document	Description of Information Contained in Document
14	02/00/97	J-U-B Engineers, Inc. 1997. *Independent Remedial Action Report, Eagle Hardware and Garden, Inc. Store No. 453, Wenatchee, Washington*. Prepared for Eagle Hardware and Garden, Inc. February.	A 9.8 acre site located in Chelan County. Arsenic, lead, DDT (and metabolites), dieldrin, and endosulfan concentrations above MTCA method A cleanup levels in upper 36-inches of soil as a result of agronomic application of pesticides for the cultivation of a pear orchard dating back to the 1800's. Selected remedial action included protective capping of the contaminated soil except in areas to be landscaped. In future landscape areas the soil was excavated to a depth of at least 36-inches and used as backfill under impervious surfaces elsewhere on the site. Fruit trees, roots, grasses and other organic debris were burned onsite. Burning residues were spread throughout the site. Remedy includes institutional controls.
15	05/00/97	EPA. 1997. Separation/Concentration Technology Alternatives for the Remediation of Pesticide-Contaminated Soil. *Engineering Bulletin*. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Office of Research and Development. EPA/540/S-97/509. May.	EPA Engineering Bulletin that discusses separation/concentration technology options for remediating pesticide-contaminated soil. The technologies discussed are radio frequency heating, thermal desorption, soil washing, solvent extraction, and supercritical CO2 extraction.
16	08/00/97	EPA. 1997. Technology Alternatives for the Remediation of Soils Contaminated with As, Cd, Cr, Hg, and Pb. *Engineering Bulletin*. U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Office of Research and Development. EPA/540/S-97/500. August.	Engineering Bulletin that describes technology alternatives for remediation of soil contaminated with As, Cd, Cr, Hg, and Pb. The technologies described are containment, solidification/stabilization, vitrification, soil washing, soil flushing, and pyrometallurgical technologies. Site requirements, applicability, performance, and BDAT status are discussed for each technology. Estimated cost ranges for the basic operation of each technology are presented.
17	09/00/97	EPA. 1997. Molecular Bonding System for Heavy Metals Stabilization (Solucorp® Industries Ltd.). *Demonstration Bulletin.* U.S. Environmental Protection Agency Superfund Innovative Technology Evaluation (SITE). EPA/540/MR-97/507. September.	A demonstration bulletin that describes the Slucorp Molecular Bonding System (MBS). This system utilizes a solid-phase chemical stabilization process to reduce the leachability of heavy metals in soils, slags, and other solid wastes. (2 pp.)
18	09/00/97	Hammond Collier & Wade - Livingtone Associates, Inc. 1997. *Independent Remedial Action Report, Sunset Ridge, 1805 Sunset Highway, East Wenatchee, Washington*. Prepared for C-D Housing Limited Partnership I - Chelan-Douglas Community Action Council, General Partner. September.	Site characterization and remediation completed under MTCA's voluntary cleanup program. The 3.3 acre site was previously used as an orchard. Site redevelopment includes a daycare. Nine samples were collected with moderate lead and arsenic concentrations. Soil excavated and placed under an asphalt cap. Remedy includes restrictive covenant.
19	10/00/97	Van Deuren J., Z. Wang, and J. Ledbetter. 1997. *Remediation Technologies Screening Matrix and Reference Guide, 3rd Edition*. L.G.S Turner & Associates, Ltd for U.S. Army Environmental Center http://www.frtr.gov/matrix2/section3/table3_8.html. November.	A reference guide that provides a "yellow pages" of remediation technologies that can be used to screen and evaluate candidate cleanup technologies for contaminated sites. The guidance distinguishes between emerging and mature technologies and assigns a relative probability of success based on available performance data, field use, and engineering judgement. It provides descriptive information on the respective technologies. It incorporates cost and performance data and focuses primarily on demonstrated technologies.
20	10/00/97	Evanko, C.R. and D.A.Dzombak. 1997. *Remediation of Metals-Contaminated Soils and Groundwater*. Technology Evaluation Report, TE-97-01. Prepared for Ground-Water Remediation Technologies Analysis Center. Cynthia R. Evanko, Ph.D., and David A. Dzombak, Ph.D., P.E., Carnegie Mellon University, Department of Civil and Environmental Engineering, Pittsburgh, PA. October.	This report summarizes remediation technologies for metals-contaminated soil and groundwater whose performance at full -scale has been verified under the U.S. EPA Superfund Innovative Technology Evaluation program for evaluation of emerging and demonstrated technologies.
21	12/00/97	ITRC. 1997. *Technical and Regulatory Guidelines for Soil Washing.* Final. The Interstate Technology and Regulatory Cooperation Work Group, Metals in Soils Work Team, Soil Washington Project. December.	This report provides an overview and status of the soil washing technology and discusses issues that may be impeding the selection of soil washing as a remedial alternative at sites. It also presents technical and regulatory guidelines for sampling both pre- and post-processed soils and discusses potential feed soil limitations. Technical discussions on soil handling and stockpiling, system operation, and dust control are included as guidance for project implementation.
22	12/00/97	ITRC. 1997. *Emerging Technologies for the Remediation of Metals in Soils, Insitu Stabilization/Inplace Inactivation*. Final. The Interstate Technology and Regulatory Cooperation Work Group, Metals in Soils Work Team, Inactivation Project. December.	This report provides an overview of different in situ stabilization/in place inactivation techniques for remediating soil with metals contamination. The overview provides an introduction to the techniques and discusses several approaches to implementation. The report also outlines several case studies and identifies future research and development needs. A preliminary cost discussion is included.
23	12/00/97	ITRC. 1997. *Emerging Technologies for the Remediation of Metals in Soils, Electrokinetics*. Final. The Interstate Technology and Regulatory Cooperation Work Group, Metals in Soils Work Team, Emerging Technologies Project. December.	This report provides general information on electrokinetic technology, including background, applicability, and potential advantages and limitations of the electrokinetic technique for remediating soil contaminated with metals.
24	12/00/97	ITRC. 1997. *Emerging Technologies for the Remediation of Metals in Soils, Phytoremediation*. Final. The Interstate Technology and Regulatory Cooperation Work Group, Metals in Soils Work Team, Emerging Technologies Project. December.	This report focuses on issues related to the remediation of metals in soils using phytoextraction techniques. It outlines the technology and its applicability to sites and contaminants. It also explores several approaches to phytoremediation, as well as areas where future research is needed. It also details preliminary cost figures from a variety of sources.
25	00/00/98	Gardea-Torresday, J.L., et. al. 1998. *Enhanced Metal-Binding Capacity of NaOH Treated Larrea Tridentata Leaf Tissue*. *Proceedings of the 1998 Conference on Hazardous Waste Research. 1* 01-110. J.L. Gradea-Torresdey, A.Hernandez, O.Rodriquez, K.J.Tiemann,and S.Sias, Department of Chemistry, The University of Texas at El Paso, Texas.	Paper presenting the experimental approach and results of a study conducted to determine any enhanced metal binding in sodium hydroxide modified creosote bush leaf tissue versus unmodified leaf tissues. The creosote bush is a common desert plant that has a high growth tolerance of heavy metal-contaminated soils.

	Date	Document	Description of Information Contained in Document
26	06/00/98	EPA. 1998. *Emerging Technology Summary, Simultaneous Destruction of Organics and Stabilization of Metals in Soils* . Site Superfund Innovative Technology Evaluation. A.Bruce King, Stephen Paff, and Randy Parker, U.S. Environmental Protection Agency. EPA/540/SR-98/500. June.	This paper summarizes a laboratory evaluation of the Sulchem Process for treatment of soils contaminated with organic hydrocarbons and heavy metals. The process mixes the material being treated with sulfur at elevated temperatures in an inert reactor system. Results and estimated cost per ton of soil are provided.
27	6/8/98	Le He'cho, I., S.Tellier, and M.Astruc. 1998. Industrial Site Soils Contaminated with Arsenic or Chromium: Evaluation of the Electrokinetic Method. *Environmental Technology* . 19:1095-1101. I.Le He'cho, S.Tellier, and M.Astruc, Laboratoire de Chimie Analytique, Universite' de Pau et des Pays de l'Adour, France. June.	A paper that summarizes the principles of the electrokinetic soil treatment process and presents an original adaptation of the electrokinetic remediation to the elimination of chromium and arsenic contained in soils.
28	6/30/98	Dutre, V., C.Kestens, J.Schaep, C.Vandecasteele. 1998. Study of the remediation of a site contaminated with arsenic. *The Science of the Total Environment.* 220:185-194. Veronika Dutre, Christel Kestens, Johan Schaep, and Carol Vandecasteele, Deoartment of Chemical Engineering, Katholieke Universiteit Leuven, Belgium. © 1998 Elsevier Science Ltd. June 30.	A paper studying solidification/stabilization with cement and/or lime for remediation of a site with highly arsenic-contaminated soil.
29	09/00/98	EPA. 1998. *Cost and Performance Report - On-Site Incineration at the Rose Township Dump Superfund Site, Holly, Michigan* . U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Technology Innovation Office. http://www.frtr.gov/cost/vol_12/rose_town/rose town.htm. September.	Presents cost and performance data for the application of onsite incineration at the Rose Township Dump Superfund Site in Holly, Michigan. Onsite incineration was used as the selected remedy for soil contaminated with PCBs, metals, VOCs, and SVOCs.
30	09/00/98	EPA. 1998. *Cost and Performance Report - On-Site Incineration at the Bridgeport Refinery and Oil Services Superfund Site, Logan township, New Jersey* . U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Technology Innovation Office. http://www.frtr.gov/cost/vol_12/bridgeport/bridgeport.htm. September.	Presents cost and performance data for the application of onsite incineration at the Bridgeport Rental and Oil Services Superfund Site in Logan Township, New Jersey. A rotary kiln incinerater was used as the selected remedy for sludge, sediment, soil, and debris contaminated with PCBs, metals, and VOCs.
31	09/00/98	EPA. 1998. *Cost and Performance Report - On-Site Incineration at the Baird and McGuire Superfund Site, Holbrook, Massachusetts* . U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Technology Innovation Office. http://www.frtr.gov/cost/vol_12/baird/baird.htm. September.	Presents cost and performance data for the application of onsite incineration at the Baird and McGuire Superfund site in Holbrook, Massachusetts. A rotary kiln incinerator was used as the selected remedy for soil contaminated with dioxins, VOCs, PAHs, pesticides, and heavy metals (including lead and arsenic).
32	03/00/99	Historic Pesticide Contamination Task Force. 1999. *Findings and Recommendations for the Remediation of Historic Pesticide Contamination* . Final Report. Prepared for the New Jersey Department of Environmental Protection. March.	In 1997, New Jersey formed a Task Force to help the New Jersey Department of Environmental Protection to identify technically and economically viable alternative strategies that will be protective of human health and the environment for sites with contamination due to historical use of pesticides. The Task Force focused its efforts on arsenic, lead, DDT (and its metabolites), dieldrin, and aldrin. This report discusses the history of pesticide use, sampling results from New Jersey agricultural sites, human health risk, and provides remedial options. Range of costs are provided and the preferred remedial action by the Task Force, soil blending, is discussed.
33	7/1/99	ITRC. 1999. Metals in Soils, Soil Washing and the Emerging Technologies of Phytoremediation, Electrokinetics, In-situ Stabilization/Inplace Inactivation. *1998 Technology Status Report.* The Interstate Technology and Regulatory Cooperation Work Group, Metals in Soils Work Team, Regulatory Guidance Project. December 1998 updates for five documents published in 1997. July 1.	Provides updates for five ITRC Metals in Soils Team documents published in 1997. These five documents include: Technical and Regulatory Guidelines for Soil Washing, Fixed Facilities for Soil Washing A Regulatory Analysis, Phytoremediation, Electrokinetics, and *In Situ* Stabilization/Inplace Inactiviation. This report provides current updates of ongoing projects using the technologies, status of field studies on the technologies, issues and future direction of the technologies. Includes tables identifying Superfund sites using phytoremediation for remediation of demonstration and sites around the U.S.
34	07/00/99	EPA. 1999. Soil Rescue Remediation Solution (Star Organics, L.L.C). *Demonstration Bulletin* . U.S. Environmental Protection Agency Superfund Innovative Technology Evaluation (SITE). EPA/540/MR-99/501. July.	EPA Demonstration Bulletin describing Star Organics, L.L.C's remediation solution (Soil Rescue) that binds heavy metal contaminants in soils and sludges. This solution reportedly does not remove toxic metals from the soil or sludge. The bulletin discusses waste applicability and an evaluation of the Soil Rescue remediation process by the Ohio Environmental Protection Agency and EPA.
35	7/9/99	Williamson, P. 1999. *Report of Voluntary Remedial Action, Chandler House Site, Yakima, Washington* . Peggy Williamson, CHMM, Fulcrum Environmental Consulting, Inc., Yakima, Washington. July 9.	Site contained lead-, arsenic-, and DDT-contaminated soil to a depth of approx. 4 ft BGS. Soil was relocated to one area of the site and capped with pavement or clean topsoil. Soil capping materials were then overlayed with sod and other landscaping materials. Remedy includes a restrictive covenant deed and O&M plan.
36	08/00/99	EPA. 1999. *Phytotechnology for Metal-Contaminated Surface Soils. EPA Tech Trends* . Steven Rock, U.S. Environmental Protection Agency National Risk Management Research Laboratory. August.	Abstract which briefly discusses the use of phytoextraction to remediate surface soils contaminated with metals at the Magic Marker site in Trenton, NJ.

	Date	Document	Description of Information Contained in Document
37	09/00/99	EPA. *Presumptive Remedy for Metals-in-Soil Sites* . U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. EPA 540-F-98-054. September.	Establishes preferred treatment technologies for metal-in-soil waste that is targeted for treatment, and containment for low-level waste requiring remediation. Also, describes technical considerations that guide selection of an appropriate presumtive remedy based on site-specific factors, and describes waste mangement requirements that may arise at metals-in-soil sites. Summarizes: the distribution of remedial technologies at 51 metals-in-soil sites, the results of the screening analysis for all technologies considered for the 51 metals-in-soil sites, and the characteristics of each of the technologies not selected as the presumptive remedy against seven detailed analysis criteria. Provides an evaluation of the the selected presumptive technologies against the appropriate NCP criteria. (48 pp.)
38	10/00/99	Peryea, F.J. 1999. *Gardening on Lead- and Arsenic-Contaminated Soils* . Frank J. Peryea, Washington State University Cooperative Extension. October.	This bulletin provides general information on why some soils contain elevated amounts of lead and arsenic, how to tell if a soil contains elevated lead and arsenic concentrations, and how to minimize risk of exposure if one chooses to garden on such soils.
39	12/28/99	Lombi,E., R.S.Sletten, and W.W.Wenzel. 1999. Sequentially Extracted Arsenic from Different Size Fractions of Contaminated Soils. *Water, Air, and Soil Pollution.* 124:319-332, 2000. E.Lombi, Institute of Soil Science, Universitat fur Bodenjultur, Vienna, Austria; R.S. Sletten, Quaternary Research Center, University of Washington, Seattle, USA; W.W. Wenzel, Department of Soil Science, IACR-Rothamsted, Harpenden, U.K. © 2000 Kluwer Academic Publishers; printed in The Netherlands.	This article assesses the distribution and the major sink of arsenic among various particle size fractions (sand, silt, and clay) of the soil.
40	2/11/00	Fulcrum Environmental Consulting. 2000. *Report of Voluntary Remedial Action Landmark Care Center, Yakima, Washington* . Prepared for Hyattcenters-Landmark, Inc., Yakima, Washington. February 11.	Site characterization and remediation completed under MTCA's voluntary cleanup program. Project represented redevelopment of 3.52 acres of a former orchard (used for 40 years). Maximum arsenic, lead and DDT were 163 ppm, 1040 ppm, and 0.156 ppm respectivley. Site remediation included insitu containment onsite under impermeable surfaces, restrictive covenant and operations and maintenance plan. No soil disposed offsite.
41	03/00/00	Brownfields Technology Support Center. Technical Assistance for the Puerto Rico Industrial Development Company, Puerto Rico. *Technologies for Treating Arsenic in Soils: Summary of Current Practices* . March.	On behalf of the Puerto Rico Industrial Development Co. Brownfields Pilot, EPA Region 2 requested information from the Brownfields Technology Support Center about innovative technologies for treating soil contaminated with arsenic. Because no site-specific information was provided, the request was limited to a general literature search of information. This document presents the findings that includes a brief description of each technology (i.e., chemical treatment *ex situ* or *in situ* , electrokinetcs, soil flushing, soil washing, solidification/stabilization, vitrification); the benefits, limitations and factors influencing effectiveness of the technologies; site information; case studies; vendor and project information; technology vendors; and publications. (37 pp)
42	3/28/00	Mulligan, C.N., R.N.Yong, and B.F.Gibbs. *Remediation technologies for metal-contaminated soils and groundwater: an evaluation* . *Engineering Geology (2001).* 60:193-207. C.N.Mulligan, Department of Building, Civil and Environmental Engineering, Concordia University, Quebec, Canada; R.N.Yong, Geoenvironmental Engineering Research Center, Cardiff School of Engineering, Cardiff University, Cardiff, United Kingdom. © 2001 Elsevier Science Ltd. March 28.	This paper describes the fate and transport of selected metals and technologies for remediation that are full-scale and developing. The technologies described include: isolation and containment, mechanical separation, pyrometallurgical separation, chemical treatment, permeable treatment walls, electrokinetics, biochemical processes, soil flushing, and soil washing.
43	6/5/00	Alam, M.G.M, S.Tokunaga, and T.Maekawa. 2000. Extraction of arsenic in a synthetic arsenic-contaminated soil using phosphate. *Chemosphere (2001).* 43:1035-1041. MG.M. Adam and T.Maekawa, Institute of Agricultural and Forest Engienering, University of Tsukuba, Ibaraki, Japan; S.Tokunaga, Department of Chemical Systems, National Institute of Mateirals and Chemical Research, Ibaraki, Japan. © 2001 Elsevier Science Ltd. June 5.	A paper that presents a study comparing the performance of neutral salts for extracting arsenic from a contaminated soil and evaluating phosphate salt for extracting arsenic at different pH, concentrations, reaction times, and temperatures.
44	08/00/00	EPA. 2000. *Innovations in Site Characterization Case Study: Site Cleanup of the Wenatchee Tree Fruit Test Plot Site Using a Dynamic Work Plan* . U.S. Environmental Protection Agency, Solid Waste and Emergency Response. EPA-542-R-00-009. August.	This report is the results of a pilot study that focused on sampling and analysis strategies for pesticide-contaminated soil. The selected remedy was excavation and offsite removal, but there is little information regarding selection of this remedy.
45	11/00/00	Akhter, H., F.K. Cartledge, J.Miller, and M.McLaren. 2000. Treatment of Arsenic-Contaminated Soils, I: Soil Characterization. *Journal of Environmental Engineering.* 999-1003. November.	First paper in a series that describe the application of *in situ* solidification/stabilization to sites contaminated by arsenic trioxide, which was used topically as an herbicide to control weeds. This paper summarizes the experiment and results performed at four sites to determine the suitability of cement-based solidification/stabilization for *in situ* soil treatment.
46	11/00/00	Miller, J. H.Akhter, F.K. Cartledge, and M.McLaren. 2000. Treatment of Arsenic-Contaminated Soils, II: Treatability Study and Remediation. *Journal of Environmental Engineering.* 1004-1012. November.	Second paper in a series that describes the application of *in situ* solidification/stabilization to sites contaminated by arsenic trioxide, which was used topically as an herbicide to control weeds. This paper summarizes the results of an investigation of treating sandy soils contaminated with arsenic at a bench scale and then carried through to remediation in the field. The treatability study focuses primarily on the use of portland cement as the binder.
47	12/22/00	USAEC. *In Situ* Electrokinetic Remediation for Metal Contaminated Soils. *Environmental Technology* . U.S. Army Environmental Center. http://aec-www.apgea.army.mil:8080/prod/usaec/et/restor/insitu.htm. December 22.	The USAEC and the ERDC conducted a field demonstration of electrokinetic remediation to assess performance and cost of the technology. The demonstration was conducted at a metals contaminated site at Naval Air Weapons Station (NAWS) Point Mugu, California. This document presents the results and conclusions. Range of cost per cubic yard provided. (3 pp.)

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48	00/00/01	Bagga, D.K., and S.Peterson. 2001. Phytoremediation fo Arsenic-Contaminated Soil as Affected by the Chelating Agent CDTA and Different Levels of Soil pH. *Remediation.* No. 1; 12:77-85; Winter 2001. Davinderjit K. Bagga and Scott Peterson. Wiley Publishers.	Journal paper presenting the methods and results of a greenhouse study to identify plants capable of tolerating high concentrations of arsenic from contaminated soil. Effects of different levels of the synthetic chelating agent, CDTA, and soil pH on arsenic uptake by selected plant species were also studied.
49	00/00/01	Byrne-Kelly, D., et. al. 2001. Revegetation of Mining Waste Using Organic Soil Amendments and Evaluation of the Potential for Creating Attractive Nuisances for Wildlife. *Proceedings of the 2001 Conference on Environmental Research.* 83-94. D.Byrne-Kelly and J.Cornish, MSE Technology-Applications, Inc., Butte, MT.; R.Gordon, HKM, Inc., Butte, MT.; and I.Licis, U.S. Environmental Protection Agency, National Risk Management Research Laboratory, Cincinnati, OH.	A paper presenting the scope and results of a project to demonstrate the use of organic amendments to enhance the establishment and growth of grass on lead mine tailings and evaluate the effect of those amendments on plant uptake of metals.
50	01/00/01	Hilts, S.R., E.R. White, and C.L.Yates. 2001. Trail Lead Program, Identification, Evaluation and Selection of Remedial Options. Steve Hilts, Cominco, Ltd., Trail, BC; Cheryl Yates, Kootenay Boundary Community Health Services Society, Trail, BC; E.R. White, Environmental Consultant. January.	Trail, British Columbia has been the site of a major lead and zinc smelting facility. Studies have found soil lead concentrations and, secondarily, house dust lead concentrations as the principal environmental determinants of elevated blood levels in children. A task force (Trail Community Lead Task Force) was formed and given the responsibility for developing a strategy to reduce Trail children's lead exposures. The purpose of this report is to present the information that the Trail Community Lead Task Force and the public used in making decisions regarding future remedial actions to be taken in Trail.
51	2/1/01	Ma, L.Q., et. al. 2001. A fern that hyperaccumulates arsenic. *Nature.* 409:579. Lean Q. Ma, Cong Tu, and Elizabeth D. Kennelley, Soil and Water Science Department, University of Georgia, Dawson, Georgia; Kenneth M. Komart, Cooperative Extension Service, University of Georgia, Dawson, Georgia; Weihua Zhang and Yong Cai, Department of Chemistry & Southeast Environmental Research Center, Florida International University, Miami, Florida. © 2001 Macmillan Magazines Ltd. February 1.	Journal article that discusses results of an experiment using the fern *Pteris vittata* (brake fern) to extract arsenic from soil. Based on their results, the plant reportedly is extremely efficient at extracting arsenic in soil and translocating it into its above-ground biomass.
52	02/00/01	EPA. 2001. Phytoremediation of Contaminated Soil and Ground Water at Hazardous Waste Sites. *Ground Water Issue.* U.S. Environmental Protection Agency, Office of Research and Development, Office of Wolid Waste and Emergency Response. EPA/540/S-01/500. February.	Describes the processes associated with the use of phytoremediation as a cleanup or containment technique for remediation of hazardous waste sites. Provides introductory material on plant processes, defines the different forms of phytoremediation and their applications, summarizes the types of contaminated media and contaminants that are appropriate for remediation, provides information on the types of vegetation that have been studied or used in phytoremediation, discusses the advantages and disadvantages of phytoremediation, and introduces considerations for the design of phytoremediation systems.
53	2/28/01	Landau Associates, Inc. 2001. *Site Characterization Report and Cleanup Plan, Maury Island Regional Park* . Prepared for Susan Black & Associates. February 28.	A 289 acre park located on Maury Island in Washington State. Soil contamination includes arsenic and lead, which is associated with areawide contamination attributed to historic operation of the former ASARCO Tacoma Smelter. The CAP evaluates active and passive cleanup actions for the site. The preferred remedy consists of both active and passive cleanup actions including construction of an onsite contaminment cell, construction of *in-situ* containment areas, deed restrictions, an O&M plan, and education signage.
54	03/00/01	EPA. *Providing Solutions for a Better Tomorrow, Reducing the Risks Associated with Lead in Soil.* U.S. Environmental Protection Agency, Office of Research and Development, Washington DC. EPA/600/F-01-014. March.	A brochure/fact sheet presenting information to better inform citizens, decision makers, and remediation engineers of the risks of lead exposure and give them tools to help solve the problem. Discusses innovative approaches such as a demonstration that by adding phosphorus to lead-contaminated soil, lead can rapidly and effectively be bound into a stable compound that will rarely be absorbed if ingested.
55	05/00/01	California Environmental Protection Agency. 2001. *Fact Sheet, Draft Removal Action Workplan for Public Comment* . California Enviornmental Protection Agency, Department of Toxic Substances Control, Glendale, CA. May.	The fact sheet contains information concerning the site background, site investigations, and the draft removal action work plan. Contaminants at the site include lead and arsenic in soil. Remedial alternatives summarized include *in situ* vitirfication and excavation and disposal.
56	5/12/01	Davis, A., et.al. 2001. Policy Analysis - An Analysis of Soil Arsenic Records of Decision. *Environmental Science & Technology.* No. 12; 35:2401-2406. Andy Davis, D.Sherwin, and R.Ditmars, Geomega; K.A.Hoenke, Chevron Environmental Management Company. © 2001 American Chemical Society. Published on web 05/12/2001.	Journal Article (paper) that summarizes and examines the decisions made with respect to soil-arsenic cleanup levels across the U.S. Provides a large list of sites around the U.S. that have had arsenic cleanup levels established. This list could be useful for identifying sites that have undergone or are undergoing remediation of arsenic-contaminated soil.
57	6/23/01	Forsgren Associates, Inc. 2001. *Site Assessment and Remedial Action Report for the Proposed Eastmont Junior High School, East Wenatchee, Washington* . Prepared for Eastmont School District. June 23.	Site characterization and remediation completed under MTCA's voluntary cleanup program. The site is approximately 36 acres located in East Wenatchee and was formerly used as an apple orchard. Soil contamination included arsenic, lead, and DDT. The proposed remedy included relocation and consolidation of contaminated soil onsite and capping with an impervious surface and/or clean top soil.
58	7/12/01	Olympus Environmental, Inc. 1991. *Site Investigation Report, Metals and Pesticides Testing, Wenatchee School District, Wenatchee, Washington* . Prepared for Wenatchee School District. July 12.	Report summarizes site characterization at proposed elementary and middle school sites. 50 soil samples were collected using a systematic sampling grid. Arsenic, lead, and DDT were detected up to 120 ppm, 2000 ppm and 46 ppm, respectively at the middle school site. Concentrations were lower at the elementry school site.

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59	8/13/01	AMEC. 2001. Letter report to Chris Duffin, LNR Affordable Housing, Portland, Oregon, re: *Soil Remediation Report, 581 and 583 Eastmont Avenue, East Wenatchee, Washington.* Prepared by Meg J. Strong, Associate, and reviewed by William A. Brewer, Associate, AMEC Earth & Environmental, Inc. August 13.	Describes site characterization and remediation conducted at an apartment complex that was a historic orchard. Lead and arsenic were detected up to 1570 ppm and 146 ppm,respectively, at a depth of 36 inches. Upper 18 inches of soil removed and replaced with clean fill over a geomembrane.
60	8/31/01	Floyd Snider McCarthy, Inc. 2001. *Kissel Park, Remedial Investigation/Feasibility Study and Cleanup Action Plan* . Prepared for The City of Yakima. August 31.	RI/FS and CAP prepared under an Agreed Order with Ecology. The 17-acre undeveloped site was an historic orchard that was converted to a hay field and later purchased by the Parks department. Soil contamination included arsenic and lead and the points of compliance were throughout the upper 3 feet of soil. The preferred remedy relies on tilling by road reclaimer and relocation with subsequent paving or soil covering.
61	11/00/01	EPA. *Summary of the Phytoremediation State of the Science Conference, Boston, Massachusetts, May 1-2, 2000* . U.S. Environmental Protection Agency, Office of Research and Development, Washington DC. EPA/625/R-01/011a. November.	***Only have table of contents.***
62	11/00/01	California Environmental Protection Agency. 2001. *Fact Sheet, Proposed Huntington Park New Elementary School #3, Proposed Removal Action* . Treva Miller, Public Participation Specialist, California Enviornmental Protection Agency, Department of Toxic Substances Control, Glendale, CA. November.	This fact sheet describes the site investigation and proposed removal action at a Los Angeles elementary school that detected arsenic in soil samples at concentrations exceeding health standards. The proposed removal action is to excavate and remove the contaminated soil and backfill with clean soil.
63	Pre-1998	Sandia National Laboratories. Date Unknown. Electrokinetic Remediation of Metals.	Presents Sandia National Laboraties' method for extending electrokinetic remediation to unsaturated soils. Costs not available. Provides contacts. (2 pp.)
64		Federal Remediation Technologies Roundtable. Date Unknown. *Plasma Hearth Process at the Science and Technology Applications Research (STAR) Center, Idaho Falls, Idaho* . http://www.frtr.gov/abstracts/00000193.html.	Provides a description, costs, and results of a bench scale and pilot scale systems that used a high thernal process that heats waste to a molten form, which is then cooled into a glass/crystalline waste form. Contaminants included radioactive wastes and metals (including arsenic)
65		Federal Remediation Technologies Roundtable. Date Unknown. *Phytoremediation at Twin Cities Army Ammunition Plant, Minneapolis-St.Paul, Minnesota.* http://www.frtr.gov/abstracts/00000175.html.	Provides a description, costs, and results for a field demonstration using phytoremediation technology to clean up 0.2 acre plots. Contaminants included heavy metals: antimony, arsenic, beryillium, lead, etc.
66		Federal Remediation Technologies Roundtable. Date Unknown. *Electrokinetics at an Active Power Substation (Confidential Location).* http://www.frtr.gov/abstracts/00000171.html.	Provides a description, costs, and results for pilot tests using electrokinetics. Electrokinetics was used in two cells (30ft long by 20 ft wide by 31ft deep): one for arsenic extraction and one for arsenic stabilization.
67		Peryea, F.J. Date Unknown. Historical use of lead arsenic insecticides, resulting soil contamination and implications for soil remediation. *Scientific Registration Symposium Presentation Poster* . Frank J. Peryea, Associate Soil and Hotricultural Scientist, Tree Fruit Research and Extension Center, Washington State University, Wenatchee, Washington.	Provides a history of the use of lead arsenate and describes the mobility of lead and arsenic in soil. Briefly discusses different remediation alternatives: removal, encapsulation, addition of hydrous iron oxides and organic metals, and additon of soluble phosphorus compounds.
68		Hinchman, R.R., M.C.Negri, and E.G.Gatliff. Date Unknown. *Phytoremediation: Using Green Plants to Clean up Contaminated Soil, Groundwater, and Wastewater* . Ray R. Hinchman, Energy Systems Division, Argonne National Laboratory, Argone, IL; M. Cristina Negri, Energy Systems Division, Argonne National Laboratory, Argone, IL; Edward G. Gatliff, Applied Natural Sciences, Inc., Fairfield, OH.	Discusses various research experiments on phytoremediation, including the uptake of lead and arsenic by phreatopic trees (poplar and willow).
69		Lamber, M., B.A. Leven, and R.M.Green. Date Unknown. *New Methods of Cleaning Up Heavy Metals in Soils and Water, Innovative Solutions to an Environmental Problem* . Hazardous Substance Research Centers, Environmental Science and Technology Briefs for Citizens.	Journal paper that discusses excavation, stabilization, and phytoremediation as three remedial technologies for cleaning up metals contaminated with soil. Provides a simplistic comparative cost table for these different technologies.

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1	12/15/96	Model Toxics Control Act Policy Advisory Committee. 1996. *Final Report of the Model Toxics Control Act Policy Advisory Committee.* December 15.	This report includes the recommendations of the Model Toxics Control Act Policy Committee (PAC). Of high relevance to the project's institutional frameworks task area is priority issue #9 on Areawide Contamination / Brownfields. The PAC recommended that Ecology be authorized to enhance the availability of prospective purchaser agreements, approve areawide investigations and model remedies, and encourage use of local toxics account funds to encourage investigations and remedy selection. The recommendations contained in this report may be helpful in considering institutional alternatives under the Institutional Frameworks Task Area.
2	05/17/99	New York State Executive Law. 1999. *Adirondack Park Agency Act.* Article 27. May 17.	Created by New York State law in 1971, the Adirondack Park Agency is an independent, bipartisan state agency responsible for developing long-range Park policy in a forum that balances statewide concerns and the interests of local governments in the Park. The Park includes approximately 2.5 million acres of public land and 3.5 million acres of privately owned lands. The Agency Board is composed of 11 members, eight of whom are New York State residents appointed by the Governor and approved by the State Senate (five of these much reside within the boundaries of the Park). In addition, there are 3 members who service in an ex-officio capacity (Commissioners of the Departments of Environmental Conservation and Economic Development and the Secretary of State). The Agency provides for the Park Land Use and Development Plan's maintenance, administration, and enforcement. The Agency is an interesting example of institutional arrangements to oversee and manage a large tract of land and may be of relevance to the Institutional Frameworks Task Area.
3	12/20/99	California Environmental Protection Agency Department of Toxic Substances Control. 1999. *Fact Sheet, Recorded Land Use Restrictions.* Assembly Bill 871. December 20.	This fact sheet provides background and contact information on Assembly Bill 871, which became effective on January 1, 1999. The bill requires that the Department of Toxic Substances Control maintain and make available to the public a list of all land use restrictions recorded pursuant to state Health and Safety Codes. This approach to list land use restrictions may be relevant to the identification of institutional alternatives under the Institutional Frameworks Task Area.
4	03/27/00	Department of Energy Ohio Field Office. 2000. *Guiding Principles for Long-Term Stewardship* . March 27.	This document lays out principles that Ohio Field Office personnel will embrace during the development of long-term stewardship plans for each project. Principles include things such as: projects should provide for stakeholder and regulator involvement; institutional controls should be appropriate for the specific process and include close coordination with federal agencies, as well as Tribal, State, and local governments, and future land use owners or custodians; cost-benefit of any potential long-term stewardship action should be evaluated at the time of remedy selection; long-term stewardship plans should allow for a mechanism to periodically review the effectiveness of the chosen remedy and make revisions; long-term stewardship plans should be designed to take advantage of proven or yet-to-be-developed technologies in lieu of continuous DOE presence onsite; and lessons learned and technological improvement realized at other OH project sites in the DOE complex should be considered in the development of long-term stewardship plans. These principles may be helpful in considering institutional alternatives, specifically related to the selection of institutional controls, under the Institutional Frameworks Task Area.
5	06/27/00	New Jersey Department of Environmental Protection. 2000. *Deed Notice Guidance, Rev. 1.1* . June 27.	The guidance and associated exhibits (sample forms) are designed to assist the regulated community in development of appropriate Deed Notices. A Deed Notice is required when the Department approves a remedial action that allows soil contamination to remain at a site above the unrestricted use soil remediation standards. This guidance may be helpful in considering the use of deed notices in Washington State.
6	12/07/00	Resources for the Future. 2000. *Long-Term Stewardship of Contaminated Sites: Trust Funds as Mechanisms for Financing and Oversight (Conference Summary).* December 7.	This is a summary of the third conference on long-term stewardship sponsored by Resource for the Future. This conference addresses the potential use of trust funds as mechanisms for financing oversight of long-term stewardship activities. Conference participants discussed the need for having an effective structure and clear purpose, the importance of public participation and stakeholder involvement, and the importance of consistency in information management. The discussion of trust funds as mechanisms for financing and oversight may be relevant to the funding analysis under the Institutional Frameworks Task Area.
7	01/00/01	Hilts, S.R., P. Geo., White, E.R., R.P. Bio., and Yates, C.L., R.N., B.S.N. 2001. *Trail Lead Program: Identification, Evaluation and Selection of Remedial Options.* January.	This report present background on the sources and health effects of lead exposure, community blood lead trends around Trail and risk assessment for lead. The report also includes the deliberations and recommendation of the Trails Community Lead Task Force on remedial options identification, evaluation, and selection. This report may be relevant to the consideration of protective measures and institutional alternatives. As well, it may be helpful in considering the Trail smelter site as a case study under the Institutional Frameworks Task Area.
8	01/00/99	WA State Department of Ecology, WA State Department of Community, Trade and Economic Development, and U.S. Environmental Protection Agency. 1999. *Brownfields Resource Guide: Guide to Agency Assistance for Brownfields Redevelopment in Washington State.* January.	This guide provides background and contact information on the WA State and federal Brownfields Programs. The guide also provides several examples of successful Brownfields redevelopment efforts in Washington State. The successful examples may be relevant to the selection of case studies under the Institutional Frameworks Task Area.
9	03/00/97	Office of the Deputy Under Secretary of Defense. 1997. *Institutional Controls: What They Are and How They Are Used.* Spring.	This fact sheet provides an overview of institutional controls, including both proprietary and government controls, and how they are used. This fact sheet may be helpful in considering the variety of existing institutional controls and institutional alternatives under the Institutional Frameworks Task Area.
10	03/00/99	Historic Pesticide Contamination Task Force. 1999. *Findings and Recommendations for the Remediation of Historic Pesticide Contamination: Final Report.* March.	This report presents the findings and recommendations of the Task Force, which was comprised of a variety of stakeholder groups including agriculture / farming, environmental, builders, realtors, bankers, and local governments, as well as ex officio participation on behalf of state governmental agencies representing health, environment and agriculture. The Task Force's recommendation were focused in six areas: site investigation and remediation; department oversight; application of remedial strategies; real estate disclosure; public education and outreach; and research needs. The recommendations contained in this report may be helpful in considering institutional alternatives under the Institutional Frameworks Task Area.
11	04/00/97	EPA. 1997. *Community Reinvestment Act (CRA)* . Office of Solid Waste and Emergency Response. April.	This fact sheet provides background and contact information on the CRA, which requires banks, thrifts, and other lenders to make capital available in low- and moderate-income urban neighborhoods. This fact sheet may relevant to analysis related to funding issues under the Institutional Frameworks Task Area.

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12	04/00/99	EPA Region 10. 1999. *Superfund Cleanup at Bunker Hill: An Overview*. April.	This fact sheet provides an overview of the history, parties involved, timeline, and cleanup activities at the Bunker Hill Superfund Site in Idaho. This fact sheet may be useful in considering the Bunker Hill Superfund Site as a case study under the Institutional Frameworks Task Area.
13	05/00/99	California Environmental Protection Agency. Revised 1999. *Fact Sheet: California Environmental Protection Agency Department of Toxic Substances Control Brownfields Initiative*. Department of Toxic Substances Control. March 1998 (Revised May 1999).	This fact sheet provides background and contact information on Cal EPA's Brownfields Initiatives. This fact sheet provides is helpful in understanding how other states address brownfields redevelopment.
14	05/00/01	Washington State Department of Ecology. 2001. *Model Toxics Control Act Cleanup Regulation: Establishing Cleanup Standards and Selecting Cleanup Actions.* Focus No. 94-130. Revised May.	This focus sheet provides background and contact information on the Model Toxics Control Act, including approaches for establishing cleanup requirements for individual sites and methods for establishing cleanup levels. The focus sheet also covers how points of compliance are determined and how cleanup actions are selected. (Note: This focus sheet may be more relevant to the Protective Measures Task Area.)
15	05/00/01	Washington State Department of Ecology. 2001. *Model Toxics Control Act Cleanup Regulation: Process for Cleanup of Hazardous Waste Sites.* Focus No. 94-129. Revised May.	This focus sheet provides background on the Model Toxics Control Act, including how the law works, how sites are cleaned up, and how potentially liable parties can work with Ecology to achieve cleanup. This focus sheet may be helpful in understanding legal and institutional issues under the analysis for the Institutional Frameworks Task Area. (Note: This focus sheet may also be relevant to the Protective Measures Task Area.)
16	06/00/01	International City/County Management Association. 2001. *Brownfields Blueprints: A Study of the Showcase Communities Initiative.* June.	This study provides information on the twenty federal agencies participating on the Interagency Working Group on Brownfields. It describes their roles in support of the Brownfields Showcase Communities with site assessment, remediation, redevelopment and education. Information provided highlights their experience with grants, loans, tax incentives, technical assistance, outreach and education, and other programs to support local communities. The study also provides case studies of the 16 initial communities involved in the Initiative, including legal, institutional, and funding arrangements established to support brownfields cleanup and redevelopment. The case studies provide insights and examples of unique public, private, and non-profit partnerships at the local, state and federal levels, as well as of nontraditional approaches to securing funding and technical assistance. The case studies presenter here may be relevant to the selection of case studies under the Institutional Frameworks Task Area.
17	07/00/00	Hahn, Gerald M. and Kratina, Kevin F. 2000. "Biennial Requirements for Deed Notices and Engineering Controls," *Site Remediation News.* Vol. 12 No. 1 - Article 01. July.	This article summarizes the requirement for deed notices and engineering controls under the State of New Jersey's Brownfields and Contaminated Site Remediation Act. Under this act, the New Jersey Department of Environmental Protection began issuing No Further Action / Covenant Not to Sue letter with an institutional control that contain a condition requiring biennial certifications attesting to the periodic monitoring and protectiveness of the controls. The requirement for deed notices described in this article may be relevant to the identification on institutional alternatives under the Institutional Frameworks Task Area.
18	08/00/01	EPA. 2001. *Meeting Summary, Institutional Controls Workshop: February 28 - March 2, 2001.* San Antonio, Texas. Updated August.	The purpose of this workshop was to 1) identify barriers and other issues of concern associated with the implementation, monitoring and enforcement of institutional controls (ICs) at Superfund sites and RCRA facilities; and 2) identity possible policy measures to address those barriers and issues. Key issues identified include: there is a need for guidance on estimating the life cycle costs of ICs; there is a need to ensure that local governments and other agencies have the necessary funding and institutional capacity to implement, monitor, and enforce ICs; there is a need for guidance on IC language in Records of Decisions (RODs) and other documents, as well as when existing IC language in RODs or other documents should be changed; the limitations on EPA property acquisition under RCRA and CERCLA pose a challenge for implementing ICs; implementing ICs on properties owned by non-signatory, non-liable parties poses special challenges; there is a need for information infrastructure, management and dissemination for ICs; the lack of uniformity in applicable state laws impedes the development of national guidance; there is a need for better understanding of when and how much layering of ICs is appropriate; there is a need for guidance on monitoring to detect IC breaches, and response actions for such breaches; and there is a need for detailed guidance and training on the process of implementing ICs. The results of this meeting may be relevant to the institution analysis under the Institutional Frameworks Task
19	08/00/01	Washington State Department of Ecology. 2001. *Model Toxics Control Act Cleanup Regulation: Developing Soil Cleanup Standards under the Model Toxics Control Act.* Focus No. 01-09-071. Revised August 2001.	This focus sheet provides background information on the establishment of soil cleanup levels based on land use types and the use of Methods A, B and C for establishing soil cleanup levels. (Note: This focus sheet may be more relevant to the Protective Measures Task Area.)
20	09/00/00	EPA. 2000. Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups. Office of Solid Waste and Emergency Response. September 2000.	This fact sheet provides an overview of the types of institutional controls that are commonly implemented at Superfund and RCRA corrective action cleanups. The fact sheet also provides factors that site managers should consider when evaluating institutional controls to be selected. The fact sheet includes a checklist for implementing institutional controls, as well as a matrix of institutional controls that covers control type, a definition and example for each type, and the associated benefits, limitations and enforcement responsibilities. This guide may be useful in considering selection of institution controls and institutional alternatives under the Institutional Frameworks Task Area.
21	09/00/01	California Environmental Protection Agency. 2001. *Fact Sheet: Cleanup Loans and Environmental Assistance to Neighborhoods (CLEAN) Program.* Department of Toxic Substances Control. September.	This fact sheet provides background and contact information on Cal EPA's CLEAN Program, which provides low-interest loans of up to $2.5 million for the cleanup or removal of hazardous materials where redevelopment is likely to have a beneficial impact on the property values, economic viability, and quality of life of a community. This program may be relevant in consider the funding issues as part of the analysis under the Institutional Frameworks Task Area.
22	09/05/01	California Environmental Protection Agency. 2001. *Phase I Environmental Site Advisory: School Property Evaluations.* Department of Toxic Substances Control, Revised September 5.	This advisory assists environmental assessors in performing environmental site assessments to provide for uniform and thorough evaluation of environmental conditions at proposed school sites. In order to obtain state funding for the acquisition or new construction of school properties, school districts must conduct a Phase I Environmental Site Assessment to determine if there may have been a release of hazardous materials on the site.
23	11/00/01	California Environmental Protection Agency. 2001. *Fact Sheet: Update on School Site Environmental Review Process.* Department of Toxic Substances Control. November 2001.	This fact sheet provides a summary of Assembly Bill 972, which became effective on October 14, 2001. This bill modifies the process for public review and approval during the environmental review process for acquisition and construction of schools using state funding. This approach to school siting may be relevant to the identification of institutional alternatives under the Institutional Frameworks Task Area.

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24	11/00/01	California Environmental Protection Agency. Revised 2001. *Fact Sheet: The Voluntary Cleanup Program.* Department of Toxic Substances Control. February 1999 (Revised November 2001).	This fact sheet provides background and contact information on the state's Voluntary Cleanup Program. This fact sheet provides is helpful in understanding how other states address voluntary cleanup.
25	11/00/98	Applegate, John S. and Dycus, Stephen. 1998. "Institutional Controls or Emperor's Clothes? Long-Term Stewardship of the Nuclear Weapons Complex." *Environmental Law Reporter*. November 1998.	This article discusses the challenges that DOE faces in developing an effective long-term stewardship program. The article provides: an overview of DOE's management program and a description of it long-lived wastes; an examination of the statutory framework for addressing long-lived wastes; and a description of a variety of institutional controls that DOE could potentially utilize to restrict future uses at site where long-lived wastes are present. The authors conclude that existing options for institutional controls are not likely to be effective for long-term stewardship and propose new procedures and institutions for long-term decision-making. Such institutions should be capable of performing essential stewardship activities that can be regularly reviewed and adjusted to meet new developments and program failures. The evaluation of institutional controls for long-term stewardship at the nuclear weapons complex may be relevant to the selection of institutional controls for long-lived wastes such as arsenic and lead.
26	12/00/97	Association of State and Territorial Solid Waste Management Officials (ASTSWMO). 1997. A*STSWMO Survey of State Institutional Control Mechanisms.* December.	This survey was conducted of state cleanup programs to determine to what extent institutional controls are used nationally and to determine the successes and issues surrounding their use. The survey report is based on the responses of 42 states, 40 of which at the time provided for the use of institution controls. Institutional controls are required for certain remedies in 31 responding states, and they are required most frequently when a remedy will not be safe for unrestricted use. Cost, proximity of human or environmental targets, technical impracticability, and anticipated future land use are among the factors considered when determining the degree of cleanup to be implemented, and therefore, need to also utilize institutional controls as part of the remedy. Deed restrictions, deed notices, land use restrictions and water use restrictions are the most common forms of institutional controls used in responding states. Local land use and zoning ordinances are also commonly used as one component of an institutional control. This survey provides helpful background on the use of institutional controls throughout the country, and may be relevant to consider a variety of approaches for using, enforcing and funding institutional controls under the Institutional Frameworks Task Area.
27		EPA. *Guidance on Settlements with Prospective Purchasers of Contaminated Property*. Office of Solid Waste and Emergency Response. Directive No. 9835.9 and 54 F.R. 34235.	This guidance updates the 1989 policy on agreements with prospective purchasers of contaminated property. The revised guidance provides greater flexibility to consider agreements with "covenants not to sue". This would encourage reuse or redevelopment of contaminated property, so long as the cleanup would have benefits to the community or the Agency, and would not pose additional health risks to the community. The guidance may be helpful in considering institutional alternatives, specifically related to the use of prospective purchaser agreements, under the Institutional Frameworks Task Area.
28		EPA. *Memorandum: Land Use in the CERCLA Remedy Selection Process*. Office of Solid Waste and Emergency Response. Directive No. 9355.7-04.	This directive, in the form of a memorandum from Elliott P. Laws, the Assistant Administrator, presents information for considering land use in selecting remedies under CERCLA and National Priorities List sites. The directive states that discussions with local land use planning authorities and other stakeholders should take place as early as possible (in the RI/FS phase) an that remedies selected should be reflective of anticipated land uses. Types of information that site managers can draw upon include, among others: current land use; zoning laws and maps; comprehensive community plans; population patterns and growth projections; existing infrastructure; institutional controls currently in place; Federal/State land use designations; cultural and historical factors; proximity to natural features; and proximity to human populations. This directive may be useful in considering land use as part of selecting remedies and may be relevant to the institutional and legal analysis under the Institutional Frameworks Task Area.
29	07/00/97	Wernstedt, Kris and Probst, Katherine N.. 1997. *Land Use and Remedy Selection: Experience from the Field - The Industri-Plex Site,* Resources For the Future. July.	This discussion paper provides background on the Industri-Plex Site including: a site description; an overview of contamination, remediation, and controls (including Trusts established to support remediation and institutional controls); a history of activities, redevelopment efforts, and public involvement at the site. The paper also provides the authors' summary conclusions about the reliance on land use decisions in remediating and redeveloping Superfund sites. The authors conclude that: Industri-Plex offers evidence that economic reuse of Superfund sites can take place; Industri-Plex should offer a cautionary tale for making reuse a major compoenent of Superfund cleanup when the program has other stated objectives (e.g., protection of human health and the environment); the remedy at this site is incomplete even as redevelopment proceeds; and they are left with an ambivalent feeling about whether the full range of community interests have been represented at Industri-Plex. This report may be useful in considering Industri-Plex as a case study and provides background on the use of Trusts as mechanisms for funding and overseeing cleanup and long-term controls.
30	07/00/97	Mazurek, Jan and Hersh, Robert. 1997. *Land Use and Remedy Selection: Experience from the Field - The Abex Site*, Resources for the Future. July.	This discussion paper provides background on the Abex Superfund Site, including: a site description; on overview of site contamination and history; a discussion of the land use role in remedy selection; and an overview of the cleanup decisions. The authors conclude that incorporating land use more fully into remedy selection can change the dynamics of site cleanup and makes the questions about cleanup levels more ambiguous. Further, they conclude that inclusion of land use issues into Superfund can complicate the position of EPA by relying on local actors for maintenance and oversight of long-term controls.
31	12/00/00	Bauer, Carl, and Probst, Katherine T.. 2000. *Long-Term Stewardship of Contaminated Sites: Trust Funds as Mechanisms for Financing and Oversight*, Resources for the Future. December.	This paper presents and evaluates three types of trust funds that could be potentially used to oversee and finance long-term controls (or long-term stewardship) at contaminated sites. The three types of trusts are: federal, state, and private/charitable. The authors developed five criteria for evaluating trusts for long-term stewardship. They are: financial security; clear rules, roles, and responsibilities; public information; enforceablity; and permanence. The authors conclude federal trust funds do not have the financial security to be appealing for long-term stewardship. Private and state trusts, while each have different advantages, may be possibilities for trusts. The authors do not engage in discussions about who should provide funding for these trusts, but merely evaluate them as mechanisms for overseeing and financing long-term stewardship. Finally, the authors recommend a series of next steps for examining and providing guidance on the use of trust funds for long-term stewardship. This paper may be relevant to the identification of institutional alternatives and legal and funding analysis sub-tasks under the Institutional Frameworks Task Area.

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32	01/00/97	Hersh, Robert, Probst, Katherine, Wernstedt, Kris, and Mazurek, Jan. 1997. *Linking Land Use and Superfund Cleanups: Uncharted Territory* , Resources for the Future, Center for Risk Management.	This paper examines the connections between land use and remedy selection at Superfund sites, largely with a focus on the use of institutional controls. The paper draws upon three related case studies of Superfund sites (Abex Site, Industri-Plex Site, and Fort Ord Site). The authors conclude that while land use-based remedies are appealing, due to the potential for reduced costs of cleanup, they also have some challenges. Specifically, some of the challenges relate to the ability of local governments to fund and enforce oversight and maintenance of institutional controls. As well, land use-based remedies have the potential to involve a large number of parties, making cleanup decisions more complex. This paper may be relevant to the identification of institutional alternatives and legal and funding analysis sub-tasks under the Institutional Frameworks Task Area.